THE IRON TRADE REVIEW

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Railroad Buying is an Important Factor

And is Taxing Capacity of Plate Mills in Central West

—Quick Fluctuations of Spot Furnace Coke Market

Heavy specifying against contracts for finished materials, which expire July 1, has further emphasized the recent prominence of specifying as compared with actual new business. This is in no sense an unfavorable indication, but the comparative inactivity in buying gives a quiet appearance to the market. Only once since the panic of 1907, has the unfilled tonnage of the United States Steel Corporation been as heavy as it was on May 31. Foreign steamship interests are about to place contracts for four merchant steamships with yards in this country.

Pig Iron

An inquiry for 7,000 tons of foundry and malleable iron, for delivery in New York state, sent out by a railway equipment concern, asks for delivery as far forward as possible. This inquiry illustrates the increasing tendency on the part of some buyers to provide for their requirements as far ahead as sellers are willing to permit. A sale of 20,000 tons of basic for last quarter shipment at $15.25, delivered, is for the latest delivery yet made in the east. The total purchases of basic recently made by this consumer amount to about 30,000 tons. Pipe buyers have been active in the eastern market. The Pennsylvania railroad has closed for 8,500 tons of coke and charcoal pig iron for third quarter delivery at Altoona. An inquiry for 25,000 tons of basic is pending at Pittsburgh, for third quarter delivery, to an eastern consumer. One Pittsburgh buyer has closed for 10,000 tons of No. 2 foundry, for most of which $13.50, valley, was paid. The southern Ohio pig iron situation shows slight improvement. The stocks of southern iron decreased about 23,000 tons last month. Pig iron prices throughout the country are being well maintained.

Plates and Shapes

In eastern territory, plate makers are still booking some orders for boiler plates for Chicago shipment, representing premiums of about $2 per ton. In the Pittsburgh territory, new business in plates is coming in slowly, but mills are well supplied with orders, while in the Chicago district, plate mills have on their books orders sufficient to tax their capacity until some time in November. Some eastern makers of structural material are still making occasional concessions. In other parts of the country, prices on shapes seem to be firmly adhered to. Structural awards in Chicago for the week amounted to slightly more than 7,000 tons. The Chesapeake & Ohio pier, at Newport News, Va., which will require from 8,000 to 10,000 tons, is still undecided, but an eastern steel company is credited with the low bid.

Wire Products

While manufacturers of wire products feel that for the most part there is little reason for complaint, some of the mills are not well supplied with specifications and their production is being curtailed. The leading interest is maintaining the market price of $1.60, Pittsburgh, for nails, but this price is being shaded by other makers. There has been some shading on quotations in wire rods, due to the principal consumers being well provided for their requirements. Manufacturers of wire products have been somewhat disappointed in not being able to advance quotations, as earlier in the year they expected to be able to do.

Railroad Buying

Buying of cars is not as active as it was, but inquiries for from 10,000 to 15,000 cars are pending. The Baltimore & Ohio will probably close next week on a large number of steel underframes. The Central of New Jersey has awarded 1,000 gondolas. The Norfolk & Western has awarded Harlan & Hollingsworth 40, and the Pressed Steel Car Co. 24 steel coaches. The St. Paul has ordered 15,000 tons of rails, the Oregon Short Line 12,000, and the Grand Trunk Pacific 10,000, all from the Illinois Steel Co. The Carolina, Clinchfield & Ohio has placed 5,000 tons of rails with the Carnegie Steel Co., for a 48-mile extension. The Chesapeake & Ohio railroad is about to close on 7,000 kegs of standard spikes. The National Railways of Mexico are inquiring for 1,650 tons of rails.

Coke

The coke market has presented some very interesting features. Blast furnace operators, as a rule, refuse to contract for $2.50, ovens, and assert that it will be impossible for them to pay such a price unless pig iron quotations show a substantial advance. On the other hand, leading coke producers in the Connellsville region are standing firmly for $2.50, and the apparent impossibility of increasing the production in the Connellsville region is favorable to high prices. In spite of occasional contracts being made at from $2.25 to $2.50, a deadlock exists as to most interests on contract coke. On spot furnace coke, the market has been moving rapidly up and down. While within a few days this grade has been sold as low as $1.85, it then recovered sharply. A given quotation on spot coke cannot be counted upon to continue for more than 24 hours. Shortage of labor supply in the Connellsville region is still a source of very serious embarrassment to the operators.

PITTSBURGH

Spot Coke Market Fluctuates

Office of THE IRON TRADE REVIEW.
2148-49 Oliver Bldg., June 11.

The rate of production in iron and steel during the past week has continued practically on the same basis as the previous week, and the records for May show that it is mainly a question of capacity that limits the tonnage output. New buying has been quiet for both iron and steel. The buying movement in pig iron for last half requirements is still slow in appearing, but the first evidence has arrived in inquiries for fair tonnages of basic iron. Semi-finished steel is oversold. Plates, while new buiness is unimportant, are being heavily demanded on contracts. Wire products show a slight weakness due to some unfilled capacity of new mills, and with wire rods represent the main retarding feature. Other finished lines are strong and have shown some improvement.

Pig Iron.—The pig iron market has continued very quiet during the past week, particularly for Bessemer and basic. A lot of 500 tons of Bessemer was closed this week at $14.25, indicating the steadiness of the market, but also showing the little interest among buyers. The basic market, while confined largely to small lots, has been enlivened by the appearance of an inquiry for about 25,000 tons for the third quarter by a large consumer, east of Pittsburgh. This is the most important tonnage appearing thus far. The demand for No. 2 foundry is fairly active, over 10,000 tons being closed by one Pittsburgh consumer for the last half, and while the order was distributed, the price at which most of it was taken was at $13.50, valley. Some of the furnaces running on foundry are holding for $13.75, and have quoted this price on inquiries that have come to them for fourth quarter. A lot of 1,000 tons of gray forge iron for last half delivery has been sold the past week at $13, valley, being the minimum of this market. Malleable iron, while not moving briskly, is showing more activity and lots of 300 tons have gone at $13.25, valley, covering the third quarter. One inquiry for 2,500 tons was withdrawn after this quotation of $13.25 had been made. It is understood that the order was placed later at the same figure.

We quote the market as follows:

(Prompt Shipment.)

Bessemer, valley	$14.25
Bessemer, Pittsburgh	15.15
Basic, valley	13.00
Basic, Pittsburgh	13.90
No. 2 foundry, Pittsburgh	14.15
Gray forge, Pittsburgh	13.90
Malleable, Pittsburgh	14.15

(Third Quarter.)

Bessemer, valley	$14.25
Bessemer, Pittsburgh	15.15
Basic Pittsburgh	14.15
No. 2 foundry, Pittsburgh	14.40
Gray forge, Pittsburgh	13.90
Malleable, Pittsburgh	14.15

Ferro-Alloys.—There is very little new inquiry for ferro-alloys. Some contracts for the first half of 1913 for ferro-manganese have been, it is reported, taken at $48.50, Baltimore. There is a slight weakening in the demand for 50 per cent ferro-silicon, as most consumers appear to be covered for their requirements for some time. Prices, however, have not changed materially. Spot manganese is quoted at $58. Domestic grades of silicon are quiet but steady without change in price.

We quote ferro-manganese at $48.50, Baltimore, and $58 to $60 for prompt delivery. The freight rate from Baltimore to Pittsburgh is $1.95 per ton.

Fifty per cent ferro-silicon is quoted nominally at $70, Pittsburgh, for prompt and forward delivery; 12 per cent, $22; 11 per cent, $21; 10 per cent, $20, f. o. b. Globe, Jisco and Ashland furnaces. The freight rate to Pittsburgh is $1.90. The foreign grades are held at $1 or more a ton over domestic prices.

Plates.—New business in steel plates is extremely quiet, but mills are so far behind on deliveries that buyers would find it difficult to secure any tonnage for from three to four months. Car buying seems to have fallen off temporarily, although there are several very important inquiries pending involving from 10,000 to 15,000 cars, and a round tonnage of ship plates is also in view, but no definite decision is expected in the immediate future. The only item of moment in the plate trade is a contract for a 2,000-ton vessel now being built on the great lakes, which order was placed this past week. There has been some buying of steel passenger coaches which, however, do not figure heavily in the plate trade. Shapes are in excellent demand, and an improvement is reported in the raw material market that has added to the tonnage of the mills considerably. Some of the heavier orders on steel piling taken during the past week have figured in the tonnage records as an important factor. While prices are unchanged and extremely firm, the report of an advance in plates does not have any authoritative foundation. Plate manufacturers express the opinion that the market is so congested with business at this time that another advance could be easily established.

We quote the market as follows:

Tank plates, ¼ inch thick, 6¼ to 100 inches, 1.25c. Extras are as follows per 100 pounds: Boiler and flange steel plates, 0.10c; A. B. M. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches 0.10c; circles, 0.20c. Plates in widths over 100 inches up to 110 inches 0.05c over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ½ inch to and including ⅜-inch plate on thin edge, 0.10c; under ⅜ and including No. 9, 0.25c. Five cents extra for less than carloads. Terms net cash in 30 days.

Sheets. — Specifications for sheets are running strong, and new business has shown an improvement which has somewhat strengthened the market and eliminated the softer spots of a week ago, when a slight shading of both black and galvanized was noted. The market has shown more strength, and the stiffening in the market for sheet bars has aided in the recovery of prices on sheets. Galvanized sheets which were shaded as low as 2.85c in the middle west, are now quoted strong at 3c. Mills are, as a rule, running from three to four weeks behind on deliveries, and report the production for May the heaviest on record.

We quote the market as follows:

Flat Sheets

Black Sheets.—Nos. 10-12, $1.60 per 100 pounds; Nos. 13-14, $1.65; Nos. 15-16, $1.70; Nos. 17-21, $1.75; Nos. 22-24, $1.70 to $1.80; Nos. 25-26, $1.75 to $1.85; No. 27, $1.90; No. 28, $1.95; No. 29, $2.00; No. 30, $2.10.

Blue Annealed.—Nos. 3-8, $1.35 per 100

pounds; Nos. 9-10, $1.40; Nos. 11-12, $1.45; Nos. 13-14, $1.50; Nos. 15-16, $1.60.

Galvanized.—Nos. 10-11, $2.00 per 100 pounds; Nos. 12-14, $2.10; Nos. 15-16, $2.25; Nos. 17-21, $2.40; Nos. 22-24, $2.50; Nos. 25-26, $2.70; No. 27, $2.85; No. 28, $3.00; No. 29, $3.10; No. 30, $3.30.

Roofing Sheets

Galvanized.

Net extras on all gages per 100 pounds. Corrugated 2-inch, 2½-inch, 3-inch and 5-inch corrugation, 5c; 2 V crimped without sticks, 5c; corrugated 1¼-inch corrugation, 10c, 3 V crimped without sticks, 10c; pressed standing seam with cleats, 15c; plain roll roofing with cleats, 15c.

Painted Roofing.

12 to 18 gage, inc., 5c; 19 to 24 gage, inc., 10c; 25 to 28 gage inc., 15c.

Tin Plate. — Specifications for tin plate are now at the heaviest, the canners taking their full contract allotment, and the excellent condition of crops that are now being harvested, is causing a freer call for supplemental orders of tin plate. Current business is holding steady and with the volume restricted because of the season. Mills are finding it all they can do to meet their contract obligations, and in some instances are considerably behind on deliveries. New business is quoted at $3.40 to $3.50. Some of the larger producers are unable to make any deliveries before the fourth quarter and are so specifying on new business that may be taken. On business for the fourth quarter, $3.50 is universally quoted for coke tin. We quote the market as follows:

Coke tin plate, 100-pound basis, 14 x 20, $3.40 to $3.50, f. o. b. mill, Pittsburgh district.

Rails and Track Material. — The market for light rails during the past week has been one of the best since prices were advanced by the leading interest. Better orders were received and large shipments made, and prices are held very firmly. In open-hearth standard section rails, the mills are considerably behind on deliveries, both for export and domestic use. The leading interest is operating extensively on export tonnage. In Bessemer rails, the standard section buying has been a little improved, orders being booked by the Carolina, Clinchfield & Ohio Railroad for 5,000 tons, and over 2,000 tons for the Western Maryland with the Carnegie Steel Co., while scattered orders amount to about 10,000 to 12,000 tons of new bookings. The improvement plans for the rail department of the Carnegie Steel Co. will greatly facilitate production, at that point, of open-hearth rails, which has become a more important and apparently permanent feature of the rail trade. In track material, the situation has grown steadily stronger. Producers of railroad spikes are booked ahead for the next three months, and are operating to capacity with prices firm at the newly established rate of 1.45c, Pittsburgh. Specifications are running heavy for all track supplies, and shipments are being pushed with all possible energy. The market is quoted as follows with the base price on open hearth steel rails 1.34c per pound at the mill:

Fifty-pound and heavier, 1.25c per pound; carloads and less than 500 tons, 1.34c per pound; light rails on base weight of 40 to 45 pounds, 1.15c, the schedule on the other weights being irregular and subject to negotiations; angle bars for standard sections, 1.50c, Pittsburgh; track bolts, 2.20c to 2.25c, Pittsburgh.

Railroad Spikes

4½, 5 and 5½ and 9-16	$1.45
3, 3½, 4, 4½ and 5 x ½	.10
3½, 4 and 4½ x 7/16	.20
3, 3½, 4 and 4½ x 3/8	.30
2½ x 3/8	.40
2½, 3 and 3½ x 5/16	.60
2 x 5-16	.80

Steel. — The demand for semi-finished steel continues strong, and most of the larger producers are sold through the third quarter. The leading interest still remains out of the market, and is buying both billets and sheet bars as occasion favors. The tonnage being placed for the last half is assuming considerable importance, and the best price being quoted is $22, mill, at Youngstown, with no concessions for Pittsburgh delivery. A number of large steel producers have become buyers of steel during the past few weeks, and inquiries for spot billets and sheet bars are quite active, while the market seems barren of surplus stock of any kind. Forging billets are in good demand, and very firm at $28, Pittsburgh, when quotations are made.

Bessemer 4 x 4 billets with 0.25 carbon and less are quoted at $22.00 to $23.00, with the usual extra for size and analysis, and open-hearth rolling billets, $22.00 to $23.00. Bessemer sheet and tin bars are quoted at $22.00 to $23.00, and open-hearth sheet bars are quoted at $22.00 to $23.00, f. o. b. Pittsburgh, for second quarter, with full freight to destination added. Forging billets are quoted at $28, Pittsburgh.

Hoops and Bands.—There has been no change in the demand for hoops and bands, but specifications continue very satisfactory and mills are operating to capacity. Shipments are going forward steadily without any indication of slowing up, but new business is of small tonnage. Prices are firm without any indication of change with hoops at 1.25c to 1.30c and bands at 1.20c, these prices being considerably below the average for a long time.

We quote the market as follows:

Hoops in carload lots, 1.25c to 1.30c, Pittsburgh; in less than carload lots, 1.40c; bands 1.20c, base, with net extras, as per standard steel.

Merchant Bars. — Merchant bars are in good demand, and specifications are running strong at the mills. Most steel bar manufacturers are reporting from three to four weeks behind on deliveries. The delay in shipments has brought about a peculiar condition, and it is reported that some bar makers and large jobbers with favorable contracts are offering prompt bars at a premium, but the market remains steady at 1.20c for all new business booked. Iron bars are firmer at 1.35c, Pittsburgh, this price representing the bulk of new business being booked. It is possible that some attractive business may be taken at 1.30c, but during the past week large orders have not appeared in sufficient volume to make this price a feature. Steel shafting is firmer, and the reports of shading on the nominal price are less frequent. Manufacturers report trade steady, but not of large volume. We quote the market as follows:

Common iron bars, 1.30c to 1.35c, Pittsburgh; Bessemer and open-hearth steel bars, 1.20c; plow and cultivator, 1.25c; channels, angles, zees, tees, under 3 inch, 1.25c, all f. o. b. mill. The following differentials are maintained on steel: Less than 2,000 pounds of a size, 0.35 advance. Cold rolled, and ground shafting, 65 per cent off in carloads and 60 and 10 per cent in less than carloads, delivered in base territory.

Muck Bar.—The muck bar demand is improving slowly, and prices are held firmly. The available tonnage of muck bar is much smaller, and some inquiries are out for covering the last half, which are bringing quotations at $29 for attractive business and $30 for smaller lots. The buying movement for muck bar is expected to show more activity towards the first of July. We quote $29 to $30, Pittsburgh, for muck bar.

Structural.—The demand for structural material is very satisfactory, and most of the fabricators are reporting a better line of inquiry than for many months and every prospect of a large volume of new business coming out for the last half. One of the weaker points of the structural market, especially from the fabricators' point of view, was the fact that a number of low-priced plate and shape contracts run through to July, which has enabled a low price on fabricating contracts. These low-priced raw material orders expiring at the end of the month will bring about a stiffening of the fabricators' quotations. A good many shops are understood to be well filled with work through the remainder of the year, and much of the severest competition has been eliminated. This, with the new business coming out, is giving a more sanguine tone to the structural business. The placing of 8,000 tons of structural material by the New Haven system with the McClintic-Marshall Construction Co. during the past week, has been one of the larger bookings. The American Bridge Co. has also taken extensive tonnage in

Louisville, Ky., for the Louisville & Nashville railroad, while the McClintic-Marshall Construction Co. has booked some mill buildings for the Apollo Steel Co. at Apollo, Pa., and two steel structures at Akron, O., and a fair amount of miscellaneous small orders. While fabricating prices are still below what the fabricators believe they should be, they are in better shape and are getting more satisfactory rates than a month ago. The local market is not active, it being still early for building and improvement programs for any considerable books to be made. Prices, however, for plain material are strong. We quote the market as follows:

Beams and channels, 15 inches and under, zees, 1.25c; tees, 1.25c; angles, from 3 to 6 inches, 1.25c; over 6 inches, 1.35c; universal and sheared, 1.30c; over 15 inches, 1.35c; plates, 6¼ inches wide and wider, 1.35c.

Merchant Pipe.—Considerable new business has been placed among the pipe makers during the past week, but the bulk of the big tonnage due in the immediate future from large consumers is yet undetermined as to definite purchase. One large buyer has placed an order for 15 miles of 6-inch steel line pipe, and there were orders also placed by other large consumers for about 20 miles of miscellaneous sizes for oil country use ranging from 2 to 10-inch pipe and tubing. Prices are very firm at the new card rate, which is $2 higher, and as the majority of the makers are booked comfortably ahead for some time, this price is expected to hold firmly. The aggregate of small current business is important, and merchant pipe is in good demand, a fair volume running for the past six weeks at steady prices. We quote the official discount to jobbers subject to the usual preferential discount to the large buyer as follows:

Iron and Steel Pipe Basing Prices.

	Steel.		Iron.	
	Butt weld.			
	Black.	Galv.	Black.	Galv.
⅛, ¼ inch	73	53	68	48
⅜ inch	74	64	69	53
½ inch	77	67	72	59
¾ to 1½ inch	80	72	75	64
2 to 3 inches	81	74	76	65
	Lap weld.			
2 inches	78	71	72	63
2½ to 4 inches	80	73	74	66
4½ to 6 inches	79	71	73	65
7 to 12 inches	77	68	71	61
13 to 15 inches	55	..	47	..
Extra Strong, Plain Ends.				
	Butt weld.			
⅜, ¼, ⅜ inch	69	59	65	55
½ inch	74	68	70	63
¾ to 1½ inch	78	72	74	65
2 to 3 inches	79	73	75	66
Extra Strong, Plain Ends.				
	Lap weld.			
2 inches	75	69	71	63
2½ to 4 inches	77	71	74	66
4½ to 6 inches	76	70	72	65
7 to 8 inches	70	60	65	55
9 to 12 inches	65	55	60	50
Double Extra Strong, Plain Ends.				
	Butt weld.			
½ inch	64	58	60	52
¾ to 1½ inch	67	61	63	55
2 to 3 inches	69	63	65	57
Double Extra Strong, Plain Ends.				
	Lap weld.			
2 inches	65	59	61	52
2½ to 4 inches	67	61	63	57
4½ to 6 inches	66	60	62	56
7 to 8 inches	60	50	55	45

Plugged and reamed pipe is furnished at 2 points higher price, either butt or lap weld.

The above discounts are for full weight pipe, subject to a variation of 5 per cent, merchant pipe, when specified, being furnished up to 6 inches at one point higher discount (lower price).

Boiler Tubes.—There has been no change in the demand for boiler tubes. Specifications have been running steadily, and shipments somewhat behind. The discount on steel boiler tubes is being held firmly, the demand being sufficient to make it not difficult to maintain the present prices. There is some talk of advancing charcoal iron tubes, but thus far the manufacturers have not come to any final conclusion. We quote the official discount on steel and charcoal iron boiler tubes as follows:

	Steel.	Iron.
1¼ inch	49	48
1¼ to 2¼ inch	64	50
2½ inch	66½	55
2¾ to 3¼ inch	71½	57½
3½ to 4½ inch	74	60
5 and 6 inch	66½	..
7 to 13 inch	44	

To destination east of Mississippi river will be sold at delivered discount for carloads lowered by 2 points, for lengths 22 feet and under; longer lengths, f. o. b. Pittsburgh. Usual extras to jobbers and boiler manufacturers.

Wire Products.—Some of the large wire mills are running low on specifications, and production has been curtailed. The leading interest, however, is well filled up for some time ahead, and is maintaining the market price of $1.60, Pittsburgh, for nails, but there are frequent tenders of $1.55 through to July 1, and it is understood that some contracts on wire nails have been taken through the third quarter at this price. Plain wire is in better shape, and there is a fairly good demand for it. The increased capacity and new capacity in this market during the past year or so has not been fully occupied nor provided for with current business, and has influenced the trend of prices quite sharply.

We quote the market as follows:

Wire nails, jobbers, carload lots $1.55 to $1.60; retailers' carload lots, $1.60 to $1.65; cut nails (western makers), jobbers' carload lots, $1.55 to $1.60, painted barb wire, jobbers' carload lots, $1.60; retailers' carload lots, $1.65 with 30c for galvanizing; plain wire to jobbers in carloads, $1.40; and to dealers, in carloads, $1.45; polished staples, $1.60; galvanized staples, $1.90.

Wire Rods.—Some shading in wire rods is reported during the past week, largely due to principal consumers being well provided for all their requirements, and some of the larger mills being unable to absorb their production which has accumulated and has been offered for slightly under the nominal market price. One sale was reported at $25.50, Pittsburgh, for wire rods which indicated the disposition to shade prices, and it is believed that, with any good sized tonnage being placed for prompt shipment, even better than $25.50 could be done.

We quote $25.50 to $26.50, Pittsburgh, for Bessemer and open-hearth wire rods.

Coke.—A feature of the coke market, which has been decidedly mixed for the last several weeks, has been another stiffening of spot coke during the past two or three days due to further heavy curtailment of production and continued unsatisfactory labor conditions in the Conellsville region. The suspension of a few furnaces during the early part of last week enabled some of the coke operators to shut off on production for the time being, and start accumulating their reserve supply of coal at oven bins, which have been empty for a long time and thus they have lowered daily production to only their actual contract obligations. The sensitiveness of the spot market was demonstrated by a sale of 100 cars of spot coke at $2.25, and other quotations of $2.30 for the last week in June. Some recent sales reached the low point of $2.05 in small lots, but there are no further deals of this kind reported. The ovens are meeting with great difficulty in operating with the short supply of labor, and are holding back more generally in production. Contract furnace coke is quoted at from $2.25 to $2.50 for last half. Standard Connellsville furnace coke is fairly steady at $2.50. One contract for 72,000 tons delivered at the rate of 12,000 tons a month was closed this week at $2.50, ovens. Some coke, not strictly standard, has been closed at $2.25, ovens. Indications are that the spot market is rapidly recovering, and where suspensions of furnaces have taken place, coke operators are reducing production and not piling coke. The interference of Memorial Day broke the rate of production during the early June week more sharply, the loss in tonnage, compared with the prior week, being approximately 15,000 tons. It is believed that the present week will show another decline. The Connellsville *Courier* reports for the week ending June 1 a total of 31,489 ovens active with a total production of 379,121 tons, as compared with 31,506 ovens active and a production of 394,316 tons for the previous week. Foundry coke is moving fairly well, and prices are steady,

the market being close to $2.75 on last half and from $2.50 to $2.75 on spot shipments. We quote standard Connellsville furnace coke for spot shipment at $2.15 to $2.50, and for contract for last half at $2.25 to $2.50. On standard Connellsville foundry coke we quote $2.50 to $2.75 for spot shipment, and on contract for last half we quote $2.60 to $2.75.

Old Material.—The market for old material has been a one-sided affair during the past week. It has been a case of scrap dealers scouring the market for stocks and getting accumulations of heavy melting steel and other grades, while consumers have been inactive. The consumption of scrap is continuing at an enormous rate in the Pittsburgh territory. Consumers will be in the market in a short time for round lots, and it is freely predicted that prices will advance, judging from the prices which dealers are now offering. There has been some activity in low phosphorus, which has been in better demand in small tonnages, but cast borings have been a little weaker, a loss of 25 cents a ton being noted owing to a slack demand and little easier supply. A slight shading on bundled sheet scrap has also been noted. Heavy melting steel has been bought freely by dealers at from $13.25 to $13.50, this price indicating that the consumer will ultimately pay about $13.50 for much of the material to be sold. Buying by large consumers over the heads of dealers for the tonnages of leading railroads has been a feature of the past week, and it is believed, has changed the market requirements of some large users of scrap quite noticeably. We quote gross tons, delivered in the Pittsburgh district, including Monessen, Steubenville, Brackenridge and Follansbee, as follows:

Heavy melting scrap	$13.25 to 13.50
Rerolling rails	14.00 to 14.50
Malleable	12.50 to 13.00
Bundled, sheet scrap	12.00 to 12.25
Iron axles	22.00 to 22.50
Old iron rails	15.00 to 15.50
Stove plate	9.00 to 9.50
No. 1 wrought scrap	13.50 to 14.00
Old car wheels	13.25 to 14.50
Low phosphorus	15.75 to 16.00
Machine shop turnings	10.75 to 11.00
Cast borings	9.75 to 10.00
No. 1 cast scrap	12.50 to 12.75

CHICAGO

Railroad Buying is an Important Factor

Office of THE IRON TRADE REVIEW,
1328 Monadnock Blk., June 11.

The upward tendency of the market is sustained by a continuation of heavy specifying and considerable buying, in which the railroads are an important factor. At present the capacity of the plate mills will be taxed until some time in November with business already on the books and there is no evidence of decreased activity in car building. The general conditions are well indicated by the fact that much of the buying is being done by agricultural manufacturers, one of the largest of whom has recently ordered built 5,000 more binders than its plans for the year called for.

Pig Iron.—Continued quiet is the characteristic feature of the situation with fair inquiry, but with few sales of any consequence, the buyers evincing a tendency to hold off in the hope of lower quotations. An advance, however, seems inevitable, as stocks are decreasing and the market is very firm in spite of the general inactivity. Two small sales are reported, involving 500 tons each. Such inquiry as appears has been almost entirely for malleable.

The following prices represent the market for Chicago delivery, except northern foundry and malleable Bessemer, which are quoted f. o. b. local furnace:

	Third quarter.	Last half.
Lake Superior charcoal	$15.75	15.75
Northern foundry No. 2	14.50	14.50
Southern foundry No. 2	15.35	15.85
Southern silv'ries, 5 per cent sil.	16.10	16.35
Jackson co. silveries, 8 per cent	17.90	17.90
Malleable Bessemer	14.50	14.50
Alabama basic	15.35	15.60

Billets.—There is but very little change in the situation, there being a continued scarcity of billets in the Chicago market, and while there is a little new business, it can be placed with difficulty, as but few of the mills are in a position to take it. We quote, open-hearth forging billets, $28, Chicago; re-rolling billets, $24.50.

Merchant Bars.—The market is characterized by a general tendency toward increased prices and by heavy specifications for early delivery. One producer reports a greater number of specifications during the past week than has been received in a like period for some time. There is no betterment in conditions as regards deliveries and the general tendency of the market is well indicated by stiffening of shafting, which is firm at 65 per cent off list for carloads and 60 per cent for less than carloads. Store prices continue firm and the demand very heavy.

We quote, f. o. b. Chicago, as follows:

Bar iron, 1.25c; hard steel bars, rerolled, 1.25c to 1.30c; soft steel bars, bands and small shapes, 1.38c base; hoops, 1.48c; smooth finished machinery steel, 1 inch and larger, 1.78c; shafting 65 per cent off list for carload lots, 62 per cent off for less than carloads.

On iron and steel from local stock we quote as follows:

Bar iron, 1.50c to 1.60c per pound base; soft steel bars, 1.60c to 1.65c per pound base; soft steel hoops, 1.80c to 1.90c, full extras.

Structural Material.—The demand for structural material continues good, several fair contracts having been placed by the railroads. While the situation as regards the fabricators is in the main unchanged, there is a tendency toward an equalization of prices to meet the conditions in the structural market. The total tonnage in this territory for the past week is 7,284 tons, the leading interest being represented by three contracts, consisting of 214 tons from the United States Smelting Co. for a sintering plant at Midvale, Utah; 305 tons from the Chicago, Burlington & Quincy Railway Co. for plate girders and 477 tons from the Missouri, Kansas & Texas Railway Co. for bridge work. The Minneapolis Steel & Machinery Co. has taken 184 tons from the University of Minnesota for a central heating plant. The Strobel Steel Construction Co. has taken 1,896 tons for highway bridges over the north and south branches of the Chicago river and the Riter-Conley Mfg. Co. has taken 1,030 tons from the Sandusky River Power Co. for pipe line construction at Fremont, O. A contract for 251 tons for the Madison Terminal building, Chicago, has been let to A. Bolters' Sons and one for 1,000 tons for deck and through plate girder spans has been let by the Chicago, Milwaukee & St. Paul Railway Co. to the Wisconsin Bridge & Iron Co. The Worden-Allen Co. has

taken 206 tons from the Public Service Co., Waukegan, Ill., for an addition to the power station. Other contracts let were 216 tons by the Fleishmann Yeast Co., for a building at Sumner, Wash.; 181 tons by the El Paso Milling Co., El Paso, Tex., for a power house; 690 tons by the Memphis Warehouse Co., for reinforced concrete work on warehouses and compress building, Memphis, Tenn., and 233 tons by the Port Arthur Pleasure Pier Co. for a Strauss bascule bridge, Port Arthur, Tex.

We quote, mill prices, f. o. b. Chicago, as follows:

Beams and channels, 15 inch and under, 1.43c. For extras, see Pittsburgh report.

Store prices are as follows:

All angles, 3 inches and larger, including 6 inches, $1.70 to $1.75 per 100 pounds; angles over 6 inches, $1.75 to $1.80 per 100 pounds, base; beams, 3 to 15 inches, inclusive, $1.70 per 100 pounds, base; channels, 3 inches and larger, $1.70 per 100 pounds, base.

Rails and Track Fastenings.—The market for this material is characterized by continued quiet, with the exception of some rail buying by the railroads, no new business being offered. There is no betterment in the crowded condition of the mills and new business is not being actively sought. The Missouri, Kansas & Texas has ordered 18,000 tons of rails from the United States Steel Corporation and the Illinois Central has divided its order for 25,000 tons of rails between the Illinois Steel Co. and the Tennessee Coal, Iron & Railroad Co.

We quote, light rails, f. o. b. Chicago, and track fastenings, f. o. b. Joliet, as follows:

Light rails, carloads, 25 to 45-pound, 1.20c to 1.25c; 16 to 20-pound, 1.25c to 1.30c; 12-pound, 1.30c to 1.35c; 8-pound, 1.35c to 1.40c.

Light section relayers, 45 pounds and under, subject to inspection $21 to $23; standard section relaying rails, subject to inspection, $23.50 to $24.

Track fastenings, f. o. b. Joliet, angle bars, 1.50c; railroad spikes, 1.55c to 1.60c, smaller size spikes, 1.65c, base; track bolts with square nuts, 1.95c to 2.05c base.

Plates.—Continued car buying and the inability of the mills to take business for delivey before the last quarter are the distinguishing factors of the situation. With no further activity in car building other than the orders that have already been placed, the capacity of the mills will be taxed until some time in November. There appears to be no secession of buying, however, and this condition indicates an increasingly firm market and an advance at a comparatively early date. The Baltimore & Ohio is in the market for from 2,000 to 3,000 center sills for the reinforcement of freight cars and the Texas Midland has ordered two 70-foot, 100-passenger gasoline electric motor cars from the General Electric Co. The St. Louis, Brownsville & Mexico has also ordered two cars of the same dimensions, capacity and motor power from the same builder and the St. Louis Southwestern has ordered ten all-steel 70-foot baggage cars and 10 all-steel, 70-foot combination baggage and mail cars from the American Car & Foundry Co.

We quote, f. o. b. Chicago, as follows:

Tank plates, ¼ inch thick, 6⅝ to 100 inches wide, 1.43c. For extras, see Pittsburgh report.

Store prices are as follows:

Tank steel, ¼ inch and heavier, up to 72 inches wide, $1.70.

Sheets.—The market for sheets reflects the general situation with a tendency toward higher quotations, which is emphasized by the new business in roofing that will result from continued activity in car building.

We quote store prices as follows:

Blue annealed, No. 10, 2.00c; No. 12, 2.05c. Box annealed, No. 28, 2.35c. Galvanized, No. 28, 3.45c.

For mill prices, see Pittsburgh report. Freight to Chicago, 18 cents.

Wire Products.—The movement of agricultural wire continues good and the market remains unchanged on a basis of 1.60c, Pittsburgh. With the continuance of favorable weather conditions, an advance in the price of wire products consistent with general market conditions may be fairly expected.

We quote, f. o. b. Chicago, as follows:

Wire nails, jobbers' carload lots, $1.78; retailers' carload lots, $1.88; retailers' less than carload lots, $1.98; painted barb wire, jobbers' carload lots, $1.78; retailers' carload lots, $1.88; retailers' less than carload lots, $1.98, with 30c for galvanizing; plain wire, jobbers' carload lots, $1.58; retailers' carload lots, $1.63.

Merchant Pipe and Tubes.—The market continues very firm, heavy buying and difficulty in making deliveries being the dominant factors of the situation. The upward tendency in pipe and tube material has culminated in a raise of one point on all pipes and tubes from ⅛ to 6 inches in size.

We quote, store prices, on merchant pipe and tubes, f. o. b. Chicago, as follows:

Iron and Steel Pipe Basing Prices

	Steel.		Iron.	
	Black	Galv.	Black.	Galv.
Butt.				
⅛ inch and ¼ inch.	70.2	49.2	62.2	41.2
⅜ inch	74.2	63.2	67.2	51.2
½ inch to 1¼ inch.	77.2	68.2	70.2	58.2
Lap.				
2 inch	75.2	67.2	67.2	57.2
4½ inch to 6 inch..	76.2	67.2	68.2	59.2
Card Weight.				
7 inch to 12 inch....	74.2	63.2	67.2	56.2
Extra Strong Plain Ends.				
Butt.				
⅛, ¼, ⅜ inch.....	65.2	53.2	59.2	47.2
½ inch	70.2	58.2	64.2	52.2
2 inch to 3 inch....	75.2	63.2	....	....
Lap.				
2 inch	71.2	59.2	65.2	53.2
7 inch to 8 inch....	66.2	54.2	60.2	48.2
Double Extra Strong.				
Butt.				
½ inch	58.2	46.2	....	....
¾ inch to 1¼ inch.	61.2	49.2	....	....
Lap.				
2 inch	59.2	47.2	....	....
4½ inch to 6 inch..	60.2	48.2	....	....
7 inch to 8 inch....	54.2	42.2	....	....

Tubes.

	Lap weld steel.	Charcoal iron.	Shelby. seamless.
	Per cent.	Per cent.	Per cent.
1 inch	38	..	56½
1¼ to 2¼ inch.....	54	39	34
2¾ to 3½ inch.....	64	49	45
3½ to 4½ inch.....	66½	49	45
5 to 6 inch.....	54	..	..

Cast Iron Pipe.—Very few active inquiries have developed from the new business that was pending last week. A small order is in the market from Herring, Ill., consisting of an invitation for bids on 1,100 tons of 6-inch piping and the city of Omaha is in the market for 7,000 tons.

We quote, f. o. b. Chicago, as follows:

Four-inch water pipe, $27.00, 6 to 12 inches, $25.00, larger sizes, $24.50; gas pipe, $1 a ton higher.

Old Material.—The market for scrap continues quiet and is characterized by a lack of buying, which is in part due to the continued scarcity of labor throughout the territory. A tendency toward weakness in railroad wrought has materialized into a drop of 25c per ton. The scrap market as a whole shows some weakness and a continued offering on the part of the railroads should cause a shading of prices on other items as well. A number of railroad lists have been issued, the largest being that of the Great Northern for 1,110 tons, the principal items of which are 345 tons of No. 1 steel rails, 222 tons of No. 1 railroad wrought and 245 tons of No. 2. A list issued by the Chicago, Milwaukee & St. Paul amounts to 1,680 tons, the principal item of which is 500 tons of steel rails. The Michigan Central has issued a list totaling 1,260 tons of mixed scrap, the principal items of which are 150 tons of wrought scrap and 60 tons of No. 1 railroad wrought. The Vandalia has issued a list of 240 tons of mixed scrap and the Elgin, Joliet & Eastern has issued a list amounting to 220 tons, the principal item of which is

150 tons of No. 1 railroad wrought. This list also includes 1,300 cast car wheels.

We quote, for delivery in consumers' yards, Chicago, as follows:

Gross Tons

Old car wheels	$13.25 to 13.75
Old iron rails	16.50 to 17.00
Rerolling rails (5 ft. and over)	13.25 to 13.75
Old steel rails (3 ft. and under)	12.50 to 13.00
Frogs, switches and guards	12.00 to 12.50
Heavy melting steel	12.00 to 12.50
Shoveling steel	11.75 to 12.25

Net Tons

No. 1 R. R. wrought	$12.50 to 13.00
No. 2 R. R. wrought	11.50 to 12.00
Arch bars and transoms	15.00 to 15.50
Knuckles, couplers and springs	11.50 to 12.00
Shafting	14.50 to 15.00
Iron car axles	19.00 to 19.50
Steel car axles	15.75 to 16.25
Locomotive tires	13.50 to 14.00
Dealers forge	10.00 to 10.50
Pipe and flues	9.00 to 9.50
No. 1 cast	12.00 to 12.50
No. 1 busheling	10.25 to 10.75
No. 2 busheling	7.50 to 8.00
No. 1 boiler cut	8.25 to 8.75
Boiler punchings	12.50 to 13.00
Cast and mixed borings	6.50 to 7.00
Machine shop turnings	7.25 to 7.75
Railroad malleable	11.75 to 12.25
Agricultural malleable	10.50 to 11.00
Angle bars, splices, etc., iron	14.00 to 14.50
Angle bars, steel	11.50 to 12.00
Stove plate and light cast scrap	10.00 to 10.50

CLEVELAND

Pig Iron Quotations Advanced

Office of THE IRON TRADE REVIEW, Penton Bldg., June 11.

Iron Ore. — The movement of iron ore from upper lake docks is heavy and yet there are not enough cargoes for all ships. Conditions are, however, vastly better for the vessel interests than they were last year. More than 600,000 tons of ore have been chartered during the last week. Some vessels are having difficulty in getting coal cargoes and are compelled to wait or go up the lakes light. The ore fleet at the head of the lakes during the past few days has been large.

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $3.75; Mesabi Bessemer, $3.50; old range non-Bessemer, $3.05; Mesabi non-Bessemer, $2.85.

Pig Iron. — As has been expected for some time, pig iron, No. 2 foundry, advanced a trifle in price within the last week, going from $13.50 to $13.75 a ton, delivered in Cleveland. The better condition of the market generally, combined with the sold-up condition of many of the furnaces and the continued high price of coke, is responsible for the higher price asked for pig iron. One dealer reports the sale of 500 tons for the last half at the advanced price. We quote, delivered in Cleveland, as follows:

No. 1 foundry	$14.25
No. 2 foundry	13.75
No. 2 southern	15.35
Gray forge	13.25
Bessemer	15.15
Lake Superior charcoal	15.75
Jackson co. 8 per cent silvery	16.00

Coke. — Furnaces continue to hesitate about buying coke for the last half, dealers seeming satisfied to await developments, while consumers are hoping that the price will drop in the near future. There has not been much activity in the foundry coke field, most of the local buyers having covered for the last half requirements. One dealer reports the sale of 80 cars of Virginia coke at $2.50, ovens. We quote:

Connellsville furnace coke, $2.00 to $2.15 for prompt delivery, and $2.25 to $2.50 on contract; Connellsville foundry coke, $2.50 to $2.75 for prompt, and $2.50 to $2.75 on contract.

Finished Material. — An attitude of independence characterizes mills furnishing finished materials because of the volume of specifications which continues to come in. All of the structural shops are busy, and most of them are all the way from 60 to 90 days behind in deliveries. Dealers say the market is at its strongest point for one and one-half years, and existing conditions are expected to continue. Specifications continue to come in at a good rate for sheets, plates and bars, although prices have not advanced, and are not expected to change much the last half. A large number of contracts for finished material expire the first of next month, but present normal conditions will continue, it is believed. Rumors for shading under $1.60 for the price of wire were afloat a few days ago, although it was claimed this was not due to an actual cutting in price.

Old Material.—Local iron and steel scrap dealers are pleased with market conditions, although complaint continues to be heard regarding the scarcity of labor, especially in the smaller cities and towns in this district. The supply of material from outside the city fell off considerably last week. Local rolling mills have been buying heavily. One of the mills has offered $11 for busheling, but is experiencing trouble in filling the order, as dealers are standing out for higher prices. One of the steel plants has been unable to get much tonnage at $12.50. There has been considerable inquiry for melting steel, which is showing better strength than it has for some time. Prices have remained unchanged. We quote, gross tons, f. o. b. Cleveland, as follows:

Gross Tons.

Old iron rails	$15.00 to 15.50
Old steel rails (under 6 ft.)	13.00 to 13.50
Old steel rails (over 6 ft.)	13.25 to 13.75
Relaying rails	19.50 to 20.00
Old car wheels	13.00 to 13.50
Old steel boiler plate	10.00 to 10.50
Malleable iron (railroad)	12.50 to 13.00
Steel axles	17.00 to 17.50
Axle turnings	10.00 to 10.50
Malleable iron (agricultural)	10.00 to 10.50
Heavy steel	12.25 to 12.75
Country mixed steel	10.75 to 11.25
Bundled sheet scrap	10.00 to 10.50

Net Tons.

No. 1 R. R. wrought	$12.00 to 12.50
No. 1 busheling	11.00 to 11.50
No. 1 machine cast	11.00 to 11.50
No. 1 dealers' wrought	10.00 to 10.50
Machine shop turnings	7.75 to 8.00
Pipes and flues	9.50 to 10.00
Wrought drillings	7.75 to 8.00
Stove plate	9.50 to 10.00
Cast borings	7.75 to 8.00
Wrought iron piling plate	14.50 to 15.00
Wrought iron arch bars	14.00 to 14.50

Lights Oxford Stack

Miss Constance Brown, daughter of Mrs. Archer Brown of East Orange, N. J., lighted the big blast furnace of the Empire Steel & Iron Co. at Oxford, N. J., June 6. The wand which she used was decorated with the colors of Michigan University, from which her father, the late Archer Brown of Rogers, Brown & Co., graduated in 1872. The lighting of this furnace was attended with such enthusiasm by the residents of Oxford and others that it was easy to see that the general feeling prevailed that better times are at last arriving. The furnace has been out of blast nearly a year, during which time repairs were made and improvements completed.

The Steel Roof Truss Co., St. Louis, has increased its capital from $25,000 to $30,000.

CINCINNATI

Southern Ohio Situation Slightly Improved

Office of THE IRON TRADE REVIEW,
503 Mercantile Library Bldg., June 11.

Pig Iron.—The southern Ohio situation is a little improved, and while there is still iron to be had on the basis of $13, Ironton, the general tendency is towards $13.25. Not enough business is being done in that territory, however, to actually test conditions, and the market must necessarily remain more or less stationary. One leading interest that has been selling its iron for $13, furnace, recently refused a rather attractive tonnage at that figure, stating that its lowest price now is $13.25. Another large interest in that district that refused to lower its quotation when the prices went down about three or four weeks ago, still adheres to $13.50, Ironton, for its iron, but is doing practically no business at this figure.

The southern market is practically unchanged. No. 2 foundry iron is holding at $11, Birmingham, for spot and third quarter shipment, and the general quotation for the fourth quarter is from $11.25 to $11.50. One redeeming feature is that stocks in furnace yards throughout the south are being steadily reduced. In Alabama stocks diminished to the extent of 22,237 tons during May, there being 140,977 tons in yards on May 1, and 118,740 tons on June 1. Of the reduction last month, 18,000 tons were furnace stocks, 3,300 tons warrant stocks, and 997 basic stocks. There are still 40,000 tons of warrant iron, 65,622 tons of furnace iron and 13,118 tons of basic iron in yards in that state.

Inquiries in both the northern and southern markets are generally for small and scattered lots, and have been noticeably few in number during the past week. The general business reported by some firms, though, aggregates a fair tonnage, and when it is taken into account that they have a good tonnage contracted for, and that they are therefore moving their iron forward at a fairly satisfactory rate, the market presents a few good features despite its present sluggish condition.

The Louisville & Nashville railroad has been buying some iron, and 3,000 tons of steel-making iron was recently sold to an Ohio consumer for fourth quarter delivery. A leading firm here has also sold 1,000 tons of malleable iron, which went into Michigan territory. High silicon iron is strong, and is quoted at $16, furnace. There is an inquiry in the market for 600 tons of northern iron from a central Ohio melter. With freight rates $3.25 from Birmingham, and $1.20 from Ironton, we quote Cincinnati prices as follows:

Southern foundry No. 2	$14.25 to 14.50
Southern foundry No. 3	13.75 to 14.00
Southern foundry No. 4	13.50 to 13.75
Southern gray forge	13.00 to 13.25
Mottled	12.25 to 12.50
Southern No. 1 soft	14.75 to 15.00
Southern No. 2 soft	14.25 to 14.50
Standard southern car wheel	25.25 to 25.50
Northern No. 2 foundry	14.20 to 14.70
Northern No. 3 foundry	13.95 to 14.20
Northern No. 4 foundry	13.45 to 13.75
Jackson co. 8 per cent silicon	16.85 to 17.20

Coke.—The contract coke market is strong, and prices are holding well. A large Connellsville interest recently refused an offer of $2.40 a ton for a good tonnage of furnace coke for last half and in some instances $2.50 is being quoted on certain inquiries for furnace grades. There is a better demand for 48 hour coke than for the 72-hour brands, principally because at least 75 per cent of the foundries in this territory have contracted for their requirements during the coming year. There are still, however, some good inquiries for foundry coke in the market. One large maker has withdrawn all quotations on its foundry grades, and refuses to consider any business at the present time. The general quotation on the best grades of furnace coke for forward delivery are from $2.25 up to $2.50, with most of the sales being made at about $2.35 or $2.40. There are cheaper grades to be had, but these are usually inferior in quality and have no general effect upon the market prices. The old difficulty of finding laborers to man the ovens is still prevalent, making it a hard matter to increase production. We quote from the leading coke-producing districts as follows:

	Prompt shipment.	Contract second half.
Connellsville district:		
Foundry coke	$2.50 to 2.75	$2.50 to 2.75
Furnace coke	2.00 to 2.15	2.35 to 2.50
Wise county district:		
Foundry coke	$2.50 to 2.75	$2.50 to 2.75
Furnace coke	2.00 to 2.25	*Sliding scale basis
Pocahontas district:		
Foundry coke	$2.50 to 2.90	$2.50 to 2.90
Furnace coke	1.85 to 2.25	1.85 to 2.25
New river:		
Foundry coke	$3.00 to 3.25	$3.00 to 3.25
Furnace coke	2.35 to 2.50	2.35 to 2.50

*Sliding scale basis means $1.60 for coke based on $9, Birmingham, for pig iron, with an advance of 16 2-3 per cent of the amount over $9 which pig iron is quoted. This is the usual basis. Other forms of sliding contracts are also made.

Finished Material.—Business in finished materials in this territory is generally reported good. Steel bars are very firm at 1.20c, Pittsburgh, and dealers report that this price may be advanced soon. Structurals are holding at 1.25c, Pittsburgh basis. The local sheet market is strong and prices with the local mill are firmer at 1.95c for black sheets, No. 28, and 3c for galvanized sheets, No. 28, both Pittsburgh basis. The L. Schrieber & Sons Co., Cincinnati, has secured the contract for the ornamental iron work for the new Union Central building now being erected here, amounting to $90,000, and the Atlesly-Dyer Co., also of Cincinnati, has been given the contract for about 400 tons of pipe to be used in the same building for plumbing purposes, etc. Architect Harry Hake, of this city, has been employed by the Cincinnati Bell Telephone Co. to prepare plans for a new office building at Fourth avenue and Hammond street, which will be 10 stories. For mill prices, see Pittsburgh report.

Warehouse business during the past week has been fair, and in some instances has been an improvement over that of the previous week. Inquiries are general, and cover about all of the articles carried in stock by local houses. We quote warehouse prices f. o. b. Cincinnati, as follows:

Steel bars, 1.65c base; iron bars, 1.60c base; structurals, 1.75c base; plates, ¼ inch and over, 1.75c base; sheets, blue annealed No. 10, 1.95c base; rivets, cone head, 2.30c base; cold rolled shafting, 60 per cent discount; boiler tubes as follows: 1¾ to 2¼ inch, 60 per cent discount; 2½ inch, 62 per cent discount; 2¾ to 3¼ inch, 65 per cent discount; 3½ to 4½ inch, 67 per cent discount; and 5 to 6 inch, 60 per cent discount; soft steel cold twisted concrete bars, 60 per cent discount; soft steel cold twisted concrete bars, cut to length as follows: ¾ inch square and larger, 1.75c; ⅝ inch square and larger, 1.85c; ½ inch square and larger, 1.95c; 5-16 to ⅜ inch square and larger, 2.15c; ¼ inch square and larger, 2.25c.

Old Material.—There is a better volume of scrap moving, and dealers are supplying contract requirements faster than the melters can use them.

Several railroads have also offered good lists during the past week, some of the scrap being bought by users direct. A recent sale of mixed cast scrap is reported to have been made to a local dealer at $8 a ton, but it is generally quoted a little higher. We quote below prices dealers will pay in Cincinnati and vicinity as follows:

Gross Tons

Old iron rails	$12.65 to 13.25
Old steel rerolling	11.00 to 11.50
Old iron axles	18.75 to 19.25
Heavy melting scrap	10.25 to 10.75
Relaying rails, malleable	9.00 to 9.50
Bundled sheet scrap	8.75 to 9.50

Net Tons.

Old No. 1 R. R. wrought	$10.25 to 10.75
No. 1 machinery cast	10.25 to 11.00
No. 1 busheling	8.75 to 9.25
Stove plate	7.00 to 8.00
Machine shop turnings	7.00 to 7.50
Cast borings	6.50 to 7.00
Heavy turnings	7.25 to 7.75
Mixed cast	8.25 to 9.25

PHILADELPHIA

Substantial Conditions Prevail in the East

Office of THE IRON TRADE REVIEW, Philadelphia, June 11.

The eastern iron and steel industry continues to manifest evidence of a substantial condition of trade. New business is active and of good volume. Numerous changes in blast furnace operations are about to be made with a net gain of three steel works furnaces. Finished prices are firm barring some deviations in shapes. Further sales of eastern plates to Chicago at a practical premium of $2 are noted. One eastern steel works was able to close for 20,000 tons of eastern basic for fourth quarter at $15.25, delivered, thus extending the market on this grade to the farthest point yet developed. Pipe makers continue to buy iron freely. Steel scrap has sold in tonnage lots at $13.50, delivered, but the old material market generally is quiet.

Pig Iron.—The principal sale in the eastern market during the past week was a block of 20,000 tons of basic pig iron for fourth quarter shipment to a leading eastern steelmaker at $15.25, delivered. The delivery period is the most forward of any sale of basic yet made in the east, but it is probable that some of the iron may be called for in the third quarter, as the buyer is melting at a heavy rate. The total purchases of basic recently made by this consumer for third and fourth quarters reach from 50,000 to 55,000 tons, and it will probably need 10,000 to 15,000 tons more for fourth quarter. Another eastern maker which has been sounding the market persistently for some time has advanced its orders and will probably buy soon. An eastern furnace which recently blew in has bookings of about 20,000 tons of basic, but these sales have all been reported at one time or another. Prompt basic prices in the east are indefinite at this time. The Pennsylvania railroad has closed for about 8,500 tons of coke and charcoal iron for third quarter delivery at Altoona. The 2,400 tons of charcoal iron was divided equally between northern and southern makers and the 6,000 tons of coke iron went to central and western Pennsylvania furnaces. Cast iron pipe makers, as a class, remain the most active buyers in the eastern market. A Delaware river shop closed for 5,000 tons or more for early shipment, paying $14.75, delivered, for the first quality material. A Virginia pipe maker bought an additional block of several thousand tons for Lynchburg, Va., delivery. An inquiry for 5,000 tons of pipe iron for this district remains pending. In rolling mill forge, an inquiry for 1,000 tons is out. Some makers are quoting $14.75, delivered, on this grade. Standard eastern Pennsylvania foundry grades show considerable strength. A second Lehigh valley interest announced in the week an advance to $15, furnace, for No. 2X for third quarter, or $15.70, Philadelphia. The run of the No. 2X market, Philadelphia, continues about $15.25 to $15.50. The demand is rather light. There has been a good selling of Virginia iron to regular customers at $13, furnace, for No. 2X for third quarter.

A Philadelphia buyer is out for 1,000 tons of malleable for June to October. It recently purchased 500 tons for early shipment. Malleable is higher in this district, due to freight conditions, and is quoted about $15.75 to $16, delivered. Low phosphorus shows no developments. The Eastern Pig Iron Association, at its meeting the past week, revealed a very cheerful sentiment. Stocks declined somewhat, but have now reached so low a point that marked reductions are not possible. Orders recorded considerable increase over the preceding month.

We quote for prompt and third quarter shipment at buyers' plants in Philadelphia and vicinity, as follows:

Eastern Pa. No. 1X foundry	$15.50 to 15.75
Eastern Pa. No. 2X foundry	15.25 to 15.50
Eastern Pa. No. 2 plain	14.75 to 15.00
Standard gray forge	14.50 to 14.75
Basic (Eastern and Central Pa.)	15.00 to 15.25
Virginia No. 2X	15.80 to 16.05
Southern No. 2	15.00 to 15.25
Standard low phosphorus	19.50 to 20.00

Coke.—Considerable furnace coke for spot shipment shows up much weaker in the eastern market. A steel maker took 4,000 tons for quick delivery at $1.85, ovens, and a merchant furnace is credited with a similar purchase at $1.90, ovens. During the past few days, offers by brokers of prompt Connellsville coke at $2, ovens, have been more freely made. Eastern furnaces are avoiding making contracts at the prices asked for Connellsville coke and a number of interests contend they cannot pay over $2, ovens, for last half on the present iron market. There promises to be considerable buying of spot coke in the east if contract quotations remain as at present. One lot of 10,000 tons or more of Virginia coke for immediate shipment was done at $2, ovens. The Virginia market prompt and forward ranges from $2 to $2.25, ovens, but these prices have been shaded. Latrobe furnace coke for last half is offered at $1.90, ovens.

Finished Material.—Miscellaneous new business with eastern mills is quite active and of good tonnage, though the market in general seems to be moving along on a slightly easier basis as respects tonnage. There is little difficulty in maintaining prices on this miscellaneous order of business and some small sales have been made at advances. One leading eastern maker has been entering some standard shape business at 1.30c, Pittsburgh, or 1.45c, Phila-

delphia. On the other hand, there are still some reports of concessions on both shape contracts and on tonnage for immediate specifications in this market. These sales are usually made at 1.20c, Pittsburgh base. Bar iron continues easier around 1.30c, Philadelphia.

Blast furnace operations among eastern steel makers are about to be increased, principally because of the lower stage of stocks. The Pennsylvania Steel Co. this week blows in one Steelton furnace and another will follow before July 1. One furnace is going out and one is going in at the Sparrows Point plant of the Maryland Steel Co., leaving capacity unchanged. The Central Iron & Steel Co., Harrisburg, will blow in within a few days one of its furnaces to work up ore in stock.

Eastern plate makers occasionally are booking further lots of boiler and higher grade plate steel for Chicago shipment at prices representing about $2 above the full price of 1.35c, Pittsburgh, for boiler steel with the Pittsburgh freight added. These orders are not large, but their being placed with eastern mills at higher prices is undoubtedly mainly due to the filled-up condition of the Pittsburgh and Chicago mills. Plate makers in the east are now making contracts for third quarter at 1.25c, Pittsburgh. An inquiry for 4,000 tons of plates for export remains current.

Billet prices are very firm in the east at a minimum of $23.40, Philadelphia, or $21, Pittsburgh, for rolling billets, and $28.40, Philadelphia, for forging billets. A Richmond buyer took 500 tons from a lake mill. An eastern Pennsylvania consumer is out for 1,000 tons of special billets.

The Virginia Bridge & Iron Works has taken 1,350 tons for the Murphy hotel addition, Richmond. Bethlehem sections are specified. James K. Doak & Co. have the general contract for the Fairmount hotel, this city, but the steel, 3,500 tons, is not settled. The Chesapeake & Ohio pier, at Newport News, Va., 8,000 to 10,000 tons, is undecided, but an eastern steel company is credited with the low bid. The Thompson-Starrett Co. has the general contract for a bank building at Wilkesbarre, 1,000 tons or so, and the steel is reported to have gone to the American Bridge Co. The Norfolk & Western railroad is out for about 5,000 tons of plates and shapes for 500 additional cars to be built at the Roanoke shop. Bids have gone in for a paper warehouse, Washington, 350 tons.

We quote, delivered in Philadelphia and vicinity, as follows:

Plain structural shapes, 1.35c to 1.40c; tank plates, 1.35c to 1.40c; steel bars, 1.35c; common bar iron, 1.30c to 1.35c; cut nails, 1.65c to 1.70c; blue annealed sheets, No. 10 gage 1.55c to 1.60c; 4 x 4-inch open-hearth rolling billets, $23.40 to $24.40; forging billets, $28.40. Extras shown under Pittsburgh report. Philadelphia warehouse prices 1.75c for plates, shapes and bars.

Ship Building Work.—The New York Ship Building Co. has taken a boat for the Old Dominion Steamboat line, which will require about 1,000 tons of plates and 500 tons of shapes. A new inquiry for another boat to require about 1,500 tons was put out this week. Financial arrangements have been completed for four additional boats of 7,000 to 8,000 tons burden, which will shortly be put before eastern yards. All the large eastern ship building plants, with one exception, are heavily filled with work, in some cases for several years ahead.

Old Material. — First-class heavy melting steel shows strength in the eastern market upon some sizable business done in the week. One steel maker has just closed on 10,000 tons additional, paying $13.50, delivered, for the first grade quality. Some yard steel is available around $13.25, delivered. On the railroad lists closing last week, and including the Pennsylvania lines, the steel brought $13.50, delivered, or better. Leading middlemen are offering $13.50, delivered, on blocks of 5,000 tons or so. The car wheels on the railroad lists went over $13.75, delivered, and the railroad wrought around $16, delivered. Apart from the buying of steel by one large consumer, the market has been quiet. We quote gross tons, delivered at consumers' plant in eastern Pennsylvania or western New Jersey, as follows:

Old iron rails	$16.50 to 17.00
Old steel rails (rerolling)	14.75 to 15.25
No. 1 heavy melting steel	13.50 to 13.75
Old car wheels	14.00 to 14.25
Old iron axles	23.00 to 24.00
Old steel axles	17.50 to 18.00
No. 1 railroad wrought	15.75 to 16.25
Wrought pipe	12.50 to 13.00
Cast borings	9.00 to 9.50
Machine shop turnings	10.00 to 10.50
Heavy cast	13.50 to 14.00
Malleable	11.75 to 12.25
Stove plate	13.50 to 11.00
No. 1 forge	12.00 to 12.50

Freight rates per ton on scrap from Philadelphia to principal eastern consuming points are: $0.60 to Ivy Rock, Pa.; $0.65 to Phoenixville, Pa.; $0.80 to Coatesville, Pa.; $0.85 to Bethlehem, Pa., Reading, Pa., and Roebling, N. J.; $1.10 to Pottsville, Pa., Lebanon, Pa., and Columbia, Pa.; $1.20 to Harrisburg and Steelton, Pa.; $1.40 to Milton, Pa.

ST. LOUIS

Railroads Inquiring for Rails

Office of THE IRON TRADE REVIEW,
St. Louis, June 11.

Pig Iron.—The pig iron market is quiet in the St. Louis territory. A malleable inquiry was put out last week, following a sale of 1,000 tons of malleable iron to a large consumer. Sales of pig, exclusive of this 1,000 tons did not exceed 700 tons last week. Our tabulated quotations, delivered, to which the Birmingham freight of $3.75 has been added, follow:

Southern No. 1	$15.25 to 15.75
Southern No. 2	14.75 to 15.25
Southern No. 3	14.25 to 14.75
Southern No. 4	13.75 to 14.25

Coke.—Inquiry for coke seems to have dropped to the minimum, with prices unchanged.

We quote 72-hour Connellsville foundry grades, $2.50 for immediate shipment or delivery through the year; 48-hour Connellsville furnace, $2 to $2.25; best 72-hour Virginia foundry, $2.50 to $2.75; 48-hour Virginia furnace, $2 to $2.25. The freight to East St. Louis and St. Louis is $2.80, and $2.70 from the Virginia fields when shipment is destined beyond St. Louis.

Finished Material. — Inquiries from several railroads for about 40,000 tons of standard rails probably will be closed before or shortly after the turn of the fiscal year, June 30. One road is asking for 5,000 tons, another for 12,000, another for 18,000, and still another for 5,000 tons. Steel bars are firm at 1.20c, Pittsburgh. New business is scarce, but orders on specifications are good. Steel plates are quoted at 1.25c, Pittsburgh, also structural material. The demand for plates and structural is very good, and deliveries have been extended. Spikes are in good demand, and shipments are behind.

Old Material. — The lists totalling 5,100 tons of scrap, put out last week, have been closed at rather high figures, with out-of-town buyers getting the bulk of the scrap offerings. These lists were put out by the Missouri-Pacific Railroad Co., 3,000 tons; Frisco, 900 tons; Mobile and Ohio, 700 tons; Kansas City Southern, 500 tons. Some of the iron was bought by St. Louis dealers. The demand for relaying rails is good. Yards of dealers are almost bare, and higher prices in other cities make out-of-town shipments heavy. With the ex-

ception of a tendency of old car wheels to advance about 50 cents a ton, our prices which buyers are willing to pay f. o. b., St. Louis, follow:

Gross Tons

Old car wheels	$13.50 to 14.25
Old iron rails	15.25 to 15.50
Re-rolling rails (5 ft. and over)	13.25 to 13.75
Old steel rails (3 ft. and under)	12.25 to 13.25
Light section relayers (45 lb. and under) subject to inspec.	21.50 to 22.50
Re-laying rails, subject to inspec.	22.50 to 23.25
Frogs, switches and guards	10.50 to 11.25
Heavy melting steel	11.50 to 12.25
Shoveling steel	10.75 to 11.25

Net Tons

No. 1 railroad wrought	$11.50 to 12.00
No. 2 railroad wrought	10.50 to 11.00
Arch bars and transoms	14.25 to 14.50
Knuckles, couplers and springs	10.50 to 11.00
Shafting	14.00 to 14.50
Iron car axles	18.50 to 19.00
Steel car axles	16.00 to 16.50
Locomotive tires	11.50 to 12.00
No. 1 country wrought	9.25 to 9.75
Pipe and flues	8.50 to 9.00
Tank iron and cut boilers	7.50 to 8.00
No. 1 cut busheling	9.25 to 9.75
No. 2 cut busheling	6.25 to 6.75
Cast and mixed borings	6.25 to 6.50
Machine shop turnings	7.00 to 7.25
Railroad malleable	10.50 to 11.00
Agricultural, malleable	9.50 to 10.00
Stove plates	9.50 to 10.00
Angle splice bars (iron)	11.25 to 12.00
Angle splice bars (steel)	9.50 to 10.00

NEW YORK

Heavy Specifying Before Contracts Expire

Office of THE IRON TRADE REVIEW, 1115 West Street Bldg., June 11.

Iron Ore. — Present indications are that dock facilities at Port Boliver will be prepared to handle Texas iron ore about September and that this material will be offered to eastern furnaces around that time. This ore, a 52 to 54 per cent iron material, will probably not be offered at less than 8 cents per unit, f. o. b. Philadelphia. One block of 50,000 tons of this ore is under contract to one eastern seller and will be tendered to eastern furnaces within the near future. There is little activity in the eastern ore market.

Pig Iron.—A moderate tonnage of new business is coming out and being placed in pig iron in this district. The principal new inquiry to come out calls for 7,000 tons of foundry and malleable grades for a railroad equipment interest for forward shipment to an up-state plant. This inquiry is interesting as indicating the attitude of large buyers since the deliveries are specified "as far forward as possible". Two Newark, N. J., buyers are out for lots of 1,000 tons of No. 2X for last half and last quarter, and there are other scattered inquiries for 500 tons and less for different points. One lot of 2,000 tons of high silicon iron for Jersey shipment is still current. The total pending inquiry is probably 15,000 tons. In sales, a New Jersey stove manufacturer bought 2,500 tons of No. 2X for last half and a machinery builder in the same district 1,800 tons of No. 1X and No. 2X for last half. On some of the No. 2X iron of this business, prices approximating $15.00, delivered, are understood to have been made by a western Pennsylvania maker, although generally eastern furnaces are quoting from $15.25 to $15.50, tidewater, and higher. A western Pennsylvania brand is also reported to have figured in the low silicon iron. An eastern buyer has closed for 1,000 tons of No. 2X for shipment to a western plant. Some small sales of malleable have been made to New Jersey territory at $15.50, delivered, or $13.75, Buffalo furnace. A New England buyer has been inquiring for an indefinite lot of off malleable. There is little business stirring in the New England district as a whole. Lehigh and Schuylkill Valley makers in the east are gradually putting their prices on a $15.00 basis for No. 2X or $15.70, tidewater, another leading maker having announced this schedule this week. Several of the prominent Buffalo makers are now well sold up for last half and $14.00, furnace, for No. 2X is being more evenly quoted. We quote at tidewater for prompt and third quarter shipment, as follows, southern and Virginia iron being given at New York docks:

Northern foundry No. 1	$15.50 to 15.75
No. 2X foundry	15.25 to 15.50
No. 2 plain	14.75 to 15.00
No. 2 Virginia	15.80 to 16.05
No. 2 southern foundry	15.00 to 15.25
Malleable	15.50 to 15.75
Gray forge	14.50 to 14.75

Ferro-Alloys. — The demand for prompt ferro-manganese has been eased up considerably by the arrival of several cargoes with more tonnage afloat. Premium prices for prompt shipment are disappearing and it is quite probable that material could now be obtained at $50.00, seaboard. There is little activity in the forward market also. A sale of 600 tons for first half at $48.50 was made in the week. Fifty per cent ferro-silicon shows more strength around $70, Pittsburgh. We quote standard ferro-manganese at $48.50, seaboard, and for prompt shipment at $50.00 to $53.00, seaboard, and 50 per cent ferro-silicon at $70, Pittsburgh.

Cast Iron Pipe.—Public lettings are more numerous. New York City is taking bids this week on 750 tons of 20-inch and 870 tons of 6 to 12-inch on a contractor's letting. Sunbury, Pa., will close on 535 tons June 15, and Wolcott, N. Y., on 585 tons, June 19, on a contractor's letting. The market shows a very satisfactory volume of business, but prices are improving very tardily. We quote 6-inch pipe at from $21.00 to $22.00, f. o. b. New York, in carload lots, with some makers asking up to $23.00.

Finished Material.—With the end of the second quarter and first half contracts in sight, July 1, buyers are evidently giving more of their attention to specifying out these lower priced commitments than to making new purchases. Specifications with all the mills are very active, each mail bringing in orders for shipments, but new business is fair. There is some contracting under way now for plates and shapes and this is usually done at 1.25c, Pittsburgh, or 1.41c, New York, but some reports still persist that in shapes especially one or two mills have quoted below this level. On the other hand, small lots of shapes for early shipment have sold at 1.30c, Pittsburgh, or 1.46c, New York. In plates some of the largest buyers in this territory have been able to considerably shade 1.25c on contracts with certain eastern interests. The recent price advance in tubular goods has stimulated heavy specifications in this line, since the former prices were guaranteed against change on contract up to July 1. New buying in pipe, though, is not heavy. Steel bars continue strong, but bar iron is easier.

Instability of labor conditions, coupled with an active market in England, has resulted in quite a few inquiries for semi-finished and finished products being received on this side. A sale of 5,000 tons of steel skelp for shipment to England has been closed and the material will be furnished by Pittsburgh mills. A

new inquiry for 4,000 tons of plates for English export is also pending in the east. The billet market in this district is very strong, one leading eastern seller is practically oversold on its output. It has been obtaining $25 to $26, New York, equivalent to $22.40 to $23.40, Pittsburgh, on rolling billets and $30, New York, on forging billets.

Bids are being taken this week on the 33-story Adams Express building on lower Broadway, which will require about 10,000 tons. Plans are out for a 12-story loft on West Forty-sixth street for the Everett Realty Co., to require about 1,000 tons. The 17-story Schiff apartment house at 107th street and Riverside drive, 2,000 to 3,000 tons, will shortly be out for figures. Buildings for the Chase Motor Co., Syracuse, N. Y., 500 tons, are tempararily in abeyance. The Victoria loft, this city, 600 tons, has gone to the Passaic Steel Co.

We quote delivered at New York tidewater, as follows:

Plain structural shapes, 1.41c to 1.46c; tank plates, 1.41c to 1.46c; steel bars, 1.36c; common iron bars, 1.32c to 1.37c; steel bars from store, 1.83c; plates and shapes from store, 1.93c; extras as shown under Pittsburgh report.

Rails and Track Material. — The Carolina, Clinchfield & Ohio railroad has placed 5,000 tons of rails with the Carnegie Steel Co. for a 48-mile extension. This work has been under consideration for several years and its fruition at this time suggests the more liberal buying policies of railroads. The National Railways of Mexico are inquiring for 1,650 tons of rails. The Chesapeake & Ohio railroad is closing this week on 7,000 kegs of standard spikes.

Old Material. — The volume of new business in old material in this market shows a fewer number of large lots but is considerable in small sales. Eastern Pennsylvania mills are paying about $13.50, for first class heavy steel, but some of the New York sellers are holding for $13.75, delivered. The supply of heavy cast offered is quite liberal. On this grade, the nearby foundries are paying from $12.50 to $12.75, delivered, and the dealers are offering not over $11.50, New York. Turnings are slightly weaker. We quote gross tons prices New York dealers will pay at tidewater, as follows:

Old car wheels	$11.25 to 11.75
Old iron axles	20.00 to 21.00
Steel axles	15.00 to 15.50
Old steel shafting	14.00 to 14.25
No. 1 heavy melting steel	11.00 to 11.25
No. 1 R. R. wrought	13.25 to 13.50
Wrought pipe	9.75 to 10.00
Cast borings	7.00 to 7.25
Machine shop turnings	8.00 to 8.25
Heavy cast	11.00 to 11.50
R. R. malleable	9.50 to 10.00
Stove plate	8.25 to 8.75
Grate bars	7.25 to 7.75

Freight rates on scrap per ton to Steelton, Pa., Columbia, Pa., Pottsville, Pa., and Harrisburg, Pa., are $1.50 from Jersey City and $2.00 from New York; to Coatesville, Pa., Ivy Rock, Pa., Phoenixville, Pa., and Reading, Pa., $1.50 from Jersey City and $1.80 from New York; to Bethlehem, Pa., $1.10 from Jersey City and $1.60 from New York; to Roebling, N. J.; $1.00 from Jersey City and $1.50 from New York; to Milton, Pa., $1.60 from Jersey City, and $2.00 from New York; to Jersey City, $1.00 from New York; to Newark $1.10 from New York.

A Novel Badge.—The official identification badge which is being used at the seventh annual convention of Master Sheet Metal Workers, at St. Louis, during the convention this week, is made of Toncan metal terne plate and incorporates the emblem of the sheet metal workers as well as that of the Toncan metal trade mark. The badges are manufactured by the Stark Rolling Mill Co., Canton, O.

BUFFALO

Higher Pig Prices—Mills Extremely Busy

Office of THE IRON TRADE REVIEW, Buffalo, June 11.

Pig Iron.—The sales for the week were about 20,000 tons, including all grades of foundry, malleable, basic and a little charcoal. Prices are much firmer, in fact they have been advanced by the various furnace interests 25 cents per ton on the high silicon grades, and 50 cents on No. 2 plain. The buying is continued even on the advanced schedule, although not in the volume that has applied in the recent past. Inquiry for the past week was lighter than previous weeks. The range of prices, f. o. b. furnace, is substantially as follows:

No. 1X foundry	$14.25 to 14.50
No. 2X foundry	14.00 to 14.25
No. 2 plain	14.00
No. 3 foundry	13.75 to 14.00
Gray forge	13.50 to 13.75
Malleable	14.25 to 14.50
Basic	14.25 to 14.50
Charcoal	15.75 to 17.50

Finished Material.—The market has been very firm during the week, buyers as well as sellers feeling that conditions justify a change in the price schedules and that the change will be upward. Some advances are expected between now and the beginning of the new quarter. Specifications are coming in heavily against contracts already closed. Buyers, apparently, are taking advantage of contract rights to get all their requirements on the present price basis. The indications are that this condition will cause a very heavy tonnage for the latter half of June, making the month exceed the May tonnage.

Deliveries continue to be extended by the various mills, taking from six to eight weeks on structural; 60 days or over on plates and shapes, and three to five weeks on bars. Cold rolled steel has been advanced $2 per ton. Merchant sizes in steel pipe have been advanced $2 per ton. This has brought out a lot of specifications.

The custom of the mills to close down on July 1 for general inventory and repairs, cutting off from one to two weeks' operation, has had its bearing on the week's figures, as many users order out their requirements ahead of this date, so as to avoid the effect of the interruption at the mills.

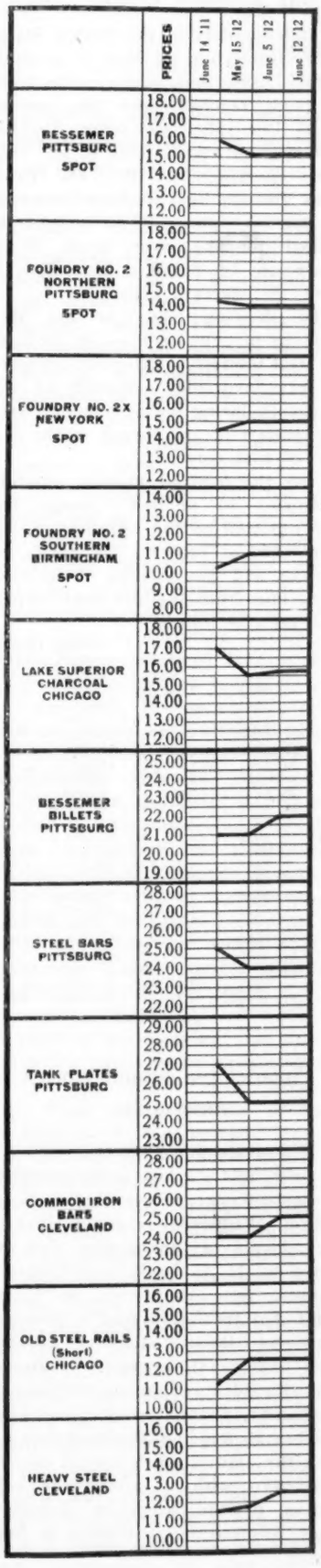
In new construction, the Buffalo Structural Steel Co. was given the contract for the steel work in the Buffalo Natural Gas Fuel Co. building, requiring about 800 tons; also for the steel in the new surgical ward of Sister hospital, Buffalo, requiring about 65 tons; Kellogg Iron Works, Buffalo, contract for steel in Drake business block, Oneida, N. Y., requiring 200 tons; Colson & Hudson, architects, Buffalo, will invite bids next week for Main street Realty Co.'s seven-story mercantile and loft building, to be erected at South Division and Oak streets, Buffalo, requiring about 600 tons.

Old Material. — There were no changes in prices during the week. Local consumers did little buying, but the dealers continued to secure enough tonnage from outside the district to maintain prices, which remain reasonably firm. The range for the week, per gross ton, f. o. b., Buffalo, is:

Heavy melting steel	$12.75 to 13.25
No. 1 railroad wrought scrap	14.00 to 14.75
No. 1 R. R. and mch. cast scrap	13.50 to 14.00
Old steel axles	16.50 to 17.25
Iron axles	21.00 to 22.00
Car wheels	12.50 to 13.00
Railroad malleable, scrap	11.50 to 12.25
Wr'ght iron and soft steel turn.	8.00 to 8.50
Cast iron borings	7.00 to 7.50
Low phosphorus steel scrap	15.75 to 16.00
Old iron rail	15.00 to 15.50
Tank iron	10.00 to 10.25
Boiler plate, sheared	13.75 to 14.25
Pipe and tank	9.50 to 10.00
Stove plate	9.75 to 10.00
Sheet iron	7.00 to 7.50
Locomotive grate bars	11.00 to 11.25

Steel for Vessels.—The Carnegie Steel Co. has closed with the American Ship Building Co. for 7,000 tons of steel plates which will be used in the construction of two steamships and two barges for the Standard Oil Co.

PRICE CHART



BIRMINGHAM

Southern Pig Iron Stocks Reduced

Office of THE IRON TRADE REVIEW,
Birmingham, Ala., June 11.

Pig Iron.—Pig iron stock figures of June 1; in round figures, indicate a reduction of some 23,000 tons in the aggregate of foundry and basic iron on Alabama yards to have been made during the month of May. The tonnage on hand June 1 was, approximately, 60,000 tons of free foundry; 40,000 tons of basic, in addition to which is the stock of charcoal iron. The active capacity on that date consisted of 14 stacks on foundry iron; five stacks on basic iron, and two stacks on charcoal iron. As has been stated previously, two additional stacks are scheduled to go in blast during this month. The movement from yards since June 1 shows a larger daily rate than for the last part of May, and the specifications in hand for the remainder of the month are equal to expectations; allowance being made for the smaller consumption that usually results around July Fourth. Recent sales are small comparatively, which is true of spot shipments, as well as deliveries further advanced.

The tonnage mentioned in the last report as pending is still unplaced, to which is added an additional 500 tons of high manganese iron. The lot of 10,000 tons of basic iron, sold in western territory against the local production, and of which mention has been made in another market, was quite the largest consideration before the selling interests for some ten days past. So far, the partial loss of interest by the trade is not reflected in the attitude of the producing interests, and prices remain very firm with a schedule of $11 per ton at Birmingham the minimum consideration. It is noted with interest that in the aggregate stock accumulation, the holdings of certain individuals are very small, in fact, certain yards have been practically depleted of stock. Such conditions are quite in keeping with reports that considerable tonnage sold for delivery in the second quarter would have to be carried over, while developments in the financial affairs of a local interest are given serious consideration in anticipating the market's condition during the next few months. An estimate of current quotations for prompt shipment and delivery in the third quarter, are as follows, with an advance of 50c per ton quotable for deliveries in the last quarter.

For delivery prior to last quarter:

No. 1 foundry	$11.50 to 11.75
No. 2 foundry	11.00 to 11.25
No. 3 foundry	10.50 to 10.75
No. 4 foundry	10.00 to 10.50
Gray forge	9.75 to 10.25
Mottled	9.50 to 10.00
Standard basic	10.75 to 11.25
Off basic	10.50 to 10.75
Standard charcoal	22.50 to 23.00

With the exception of charcoal iron, an advance of 25c to 50c per ton would be asked over the above figures for deliveries in the last quarter.

METAL MARKETS

New York

June 11.

Tin.—Expectants of an early settlement of the London dock-hands strike and a resumption of free movements of tin have been disappointed up to date. Practically no metal has been discharged or loaded for shipment to this market during the past two weeks and the supplies of spot tin at both places are getting very low. The margin between spot and future standard tin in London today is over £10 per ton, and there is a premium of 2½c per pound on spot and June Straits over July in the New York market. The closing prices of spot and three months on the London metal exchange today are £206 and £195 15s respectively, compared with £200 and £196, June 4. In the local market spot and June tin sold at 47.90c and 47.75c and July at 45.25c on Monday. Today the market closed about ½c lower at 47.37½c for nearby, and 44.90c for July. Consumers are displaying great caution and have bought only to meet immediate needs.

Arrivals of tin since June 1 aggregate a small total, being only 540 tons, and there are but 1,355 tons afloat.

Copper. — The Copper Producers' Association reported a reduction of 15,000,000 pounds in the surplus copper held in first hands June 1, compared with May 1. The general statistics made a decidedly favorable showing from the seller's point of view, both domestic and foreign shipments disclosing an active month's business. Deliveries into domestic consumption were 72,702,277 pounds, and for export 69,485,945 pounds.

The market for electrolytic is now established at 17.50c delivered 30 days, and some sellers are asking the same

figure for cash New York metal. Lake is 17.50c to 17.62½c and casting is 17.25c. Consumers are hesitating at the new high levels though there is a general feeling that a further advance could easily be worked.

Chicago

June 10.

New Metals.—The metal market gives evidence of increasing strength, copper continuing to advance and spelter selling for 6.85c, Chicago, an advance of $1 a ton over last week's quotation. The quotation on lead is also higher and tin shows stronger. There is considerable buying and dealers are of the opinion that the market will continue to advance.

We quote, dealers' selling prices, f. o. b. Chicago, as follows:

Lake copper, carload lots, 17⅛c; casting, 17c; smaller lots, ¼c to ¾c higher. Spelter, car lots, 6.85c; lead, desilverized, 4.20c in 50-ton lots; corroding, 25c per 100 pounds higher; sheet zinc, 8.65c, f. o. b. La Salle, in car lots of 600-pound casks; pig tin, 48.25c; Cookson's antimony, 9c; other grades, 7½c to 8¼c.

Old Metals.—Following the general trend of market conditions, the old metals show somewhat stronger with a tendency toward an upward movement in some instances.

We quote, dealers' selling prices, f. o. b. Chicago, as follows:

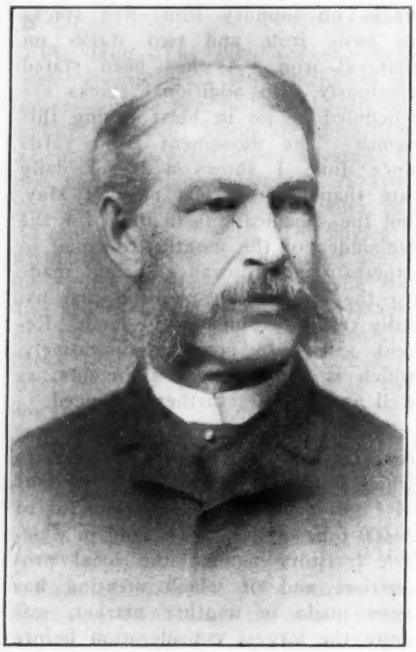
Copper wire, crucible shapes, 14¾c; copper bottoms, 13¼c; heavy cut crucible copper, 14¾c; heavy red brass, 12½c; heavy yellow brass, 10c; No. 1 red brass borings, 11c; No. 1 yellow brass borings, 9c; brass clippings, 9¼c; lead pipe, 3½c; zinc scrap, 5⅛c; tea lead, 4c; No. 1 aluminum, 12½c; No. 1 pewter, 28c; block tin pipe, 41c; tin foil, 35c; linotype dross, 3¼c; electrotype dross, 3c; stereotype plates, 4½c; stereotype dross, 3¼c; prime slab zinc dross, $90 a ton.

Death of D. B. Chambers

Dexter B. Chambers, secretary of the Stewart Iron Co., Cleveland, and a pioneer Youngstown steel man, died Monday at his home in Fern Hall, Cleveland. He was 83 years old, and had been ill some time.

Mr. Chambers was born in New York state, and came to Cleveland when a young man. He later became active head of the Chambers & Co., lumber merchants. While engaged in the lumber business Mr. Chambers became interested in the Youngstown steel industry, becoming connected with the Brown, Bonnell & Co., one of the first steel companies of that city.

John C. Searight, 40 years old, drowned in the Niagara river at Buffalo, on June 8. He had retired a few months ago from the superintendency of the Northern furnaces of the Republic Iron & Steel Co., Youngstown. Mr Searight began as a chemist and blast furnace superintendent in the Pittsburgh district and after several years was transferred to New Castle as superintendent of the Carnegie furnaces, which position he held for 14 years. He had served under John Reis, now the first vice president of the United States Steel Corporation. About three years ago he resigned to accept the position with



D. B. CHAMBERS

the Republic Iron & Steel Co., retiring from active business eight months ago.

Buffalo, June 11. (By wire.)—Capt. J. J. H. Brown, of Brown & Co., died very suddenly at his home last night at the age of 71 years. He was one of the best known vessel owners on the lakes and had been identified with its commerce since boyhood. He was at one time president of the Lake Carriers' Association and was at the time of his death a member of its board of directors and a man of great influence in its affairs. While practically the oldest among the active vessel owners, he kept his interests quite alert and had added a number of modern vessels to his fleet during recent years.

ONCE SINCE PANIC

Has Steel Corporation Unfilled Tonnage Exceeded Present Total.

Unfilled orders of the United States Steel Corporation on May 31 amounted to 5,750,983 tons, which is the highest point reached since the quarter ended Dec. 31, 1909, when 5,927,031 tons was on hand. This is the only time reported since the 1907 panic when the unfilled tonnage exceeded the present figures. The increase in unfilled tonnage over April 30 is shown to be 86,098 tons. This is about the increase predicted.

The showing made by the May bookings of new business by the leading steel interest is generally accepted as very favorable, inasmuch as the shipments during the past month were the heaviest of any month in the history of that company.

Since the plan of making monthly statements of unfilled tonnage has been followed by the Corporation, the statements of business on hand, the tonnage and percentages of increase or decline from the previous month, have been as follows:

Date.	Total.	Change, tonnage.	Change, per cent.
May 31, 1912....	5,750,983	86,098+	1.52+
Apr. 30. 1912....	5,664,885	360,044+	6.97+
Mar. 31, 1912....	5,304,841	149,359—	2.79—
Feb. 29, 1912....	5,454,200	74,479+	1.38+
Jan. 31, 1912....	5,379,721	294,960+	5.71+
Dec. 31, 1911....	5,084,761	942,806+	23.24+
Nov. 30, 1911....	4,141,955	447,627+	12.06+
Oct. 31, 1911....	3,694,328	83,011+	2.25+
Sept. 30, 1911....	3,611,317	84,668—	2.34—
Aug. 31, 1911....	3,695,985	111,900+	3.33+
July 31, 1911....	3,584,085	223,027+	7.16+
June 30, 1911....	3,361,058	247,871+	7.96+
May 31, 1911....	3,113,187	105,617—	3.28—
Apr. 30, 1911....	3,218,704	228,597—	6.63—
Mar. 31, 1911....	3,447,301	46,758+	1.37+
Feb. 28, 1911....	3,400,543	289,624+	9.31+
Jan. 31, 1911....	3,110,919	436,162+	16.30+
Dec. 31, 1910....	2,674,757	85,656—	3.09—
Nov. 30, 1910....	2,760,413	111,536—	3.88—
Oct. 31, 1910....	2,971,949	286,157—	9.12—
Sept. 30, 1910....	3.159,106	379,088—	10.74—
Aug. 31, 1910....	3,537,128	433,803—	10.92—
July 31, 1910....	3,910,931	286,863—	6.72—
June 30, 1910....	4,257,794	.....	....

Philadelphia Foundrymen's Association

The Philadelphia Foundrymen's Association held its last meeting before the mid-summer recess at the Hotel Walton, Wednesday evening, June 5. The address of the evening was delivered by H. L. Lack, of Johnson & Johnson, New Brunswick, N. J., on "First Aid to the Injured". The lecture was illustrated with lantern slides and was followed by a discussion. President Thomas Devlin, of the society, announced that the Philadelphia & Reading Railroad had offered the association a special car for those who wish to attend the convention of the American Foundrymen's Association at Buffalo in September.

President Worth Tells of Various Lunches

At Which Market Conditions Were Discussed—Days of the Panic Reviewed by Mr. Thorne — Corporation Hearings Resumed

After a two-week's adjournment, during which time the counsel for both sides were engaged in the examination of a large quantity of documentary exidence, which will later be entered into the record of testimony, the Steel Corporation hearings were resumed in New York Monday. Oakleigh Thorne, president of the Trust Co. of America up to last February, was questioned by Judge Dickinson in connection with the run on that bank which began on Oct. 23, 1907, and continued until early in November of that year.

Mr. Thorne described the events which led up to the run on his bank in 1907. On Oct. 22 of that year, when the financial situation was becoming greatly strained, he had a conversation with George W. Perkins and Harry B. Davidson, during which Mr. Thorne informed Messrs. Davidson and Perkins as to the condition of his bank. It was entirely solvent, having assets of $74,000,000, deposits of $67,000,000 and actual cash on hand $12,000,000. Messrs. Davidson and Perkins then submitted a proposition to Mr. Thorne whereby a committee was to examine the affairs of the Trust company and, if its condition was found to be as represented, they would see that that bank was rendered any assistance which might be required. This examination was accordingly made the next day, the committee beginning its work at 7 o'clock in the morning. On that day, Oct. 23, however, an article appeared in the New York Times stating that the Trust company was in serious condition. A run immediately started and during the course of that day $13,500,000 were withdrawn by the depositors. Mr. Thorne stated that he borrowed $1,000,000 from J. P. Morgan and $1,500,000 from James T. Woodward, of the Hanover National Bank, during the day. At a meeting held that night, Mr. Morgan further agreed to loan him $10,000,000, for which $20,000,000 of collateral was offered. Mr. Morgan, on Nov. 5 or 6, also agreed to loan the Trust company an additional $15,000,000.

The witness stated that this aid, which was extended him, was not conditional upon his selling his Tennessee stock. Most of his testimony was a repetition of what was submitted before the Stanley committee.

Bray Takes the Stand

C. W. Bray, Bridgeport, Pa., formerly president of the American Tin Plate Co., and later of the American Sheet & Tin Plate Co., was called to the stand and testified as to the various capacities in which he has been interested in the tin plate industry. He testified that at the time of his connection with the Beaver Tin Plate Co., a tin plate association existed and of this he identified the various members so far as he knew. Mr. Bray remembered little of the transactions of this association.

Asked about the Gary dinners, Mr. Bray said that he had attended these meetings from the time they began in 1907 until he resigned his position on Dec. 31, 1908. He said he was a member of a sheet and tin plate committee which was appointed at one of the dinners. Two other members of this committee were James A. Campbell, of the Youngstown Sheet & Tube Co., and Mr. Scott, of La Belle Iron Co. This committee never held any formal meetings, but Mr. Bray would often talk over prices and business conditions with either Mr. Scott or Mr. Campbell. He stated he would ask questions such as these: "How is your trade?" "How do your customers take the price?" "Do you think the volume is satisfactory?" and "Do you think a lowering of the price would increase the volume?"

Mr. Worth Testifies

W. P. Worth, president of Worth Bros. Co. and Coatesville Rolling Mill Co., Coatesville, Pa., told about the lapweld boiler tube association from 1902 to 1904. He also told about the plate association of 1900 to 1905.

At the second plate meeting, the witness said, Judge Gary attended and tried to get an allotment of 15 per cent for the Illinois Steel Co.

Mr. Worth said Gary generally indicated at the dinners whether the Corporation would change or maintain prices, thus establishing a "guide". These guides were no longer set after the dinner in February, 1909.

Mr. Worth was asked about a "Gary dinner," which took place on Feb. 18, 1909. He stated that "Judge Gary was always a man who liked a steady market and so he would indicate what the Corporation would do in regard to raising, lowering or maintaining the price." At the meeting in February, 1909, Judge Gary stated that conditions were such that he felt as though he didn't want his hands tied in the matter of prices.

"So after that you were left without a guide?" asked Judge Dickinson.

"Yes," answered Mr. Worth.

Mr. Worth also described certain luncheons of plate producers, which were held in Pittsburgh, New York and Philadelphia, about two or three years ago. He attended these meetings by invitation from Mr. King. Prices were discussed and, although no price was fixed, the result was that prices were pretty well maintained.

"Did those who attended the meetings make announcements in case they decided to cut the price?" asked Judge Dickinson.

"I am sorry to say that custom wasn't always followed," answered Mr. Worth.

Series of Luncheons

In cross examination by R. V. Lindabury, Mr. Worth described a series of luncheons, held by manufacturers of tubes. At these luncheons C. C. Converse was the guest of honor. Mr. Converse would generally give the guests a little talk on business conditions, after which prices and volume of business were discussed. The various members would contribute to a fund, out of which the expenses of the luncheons were paid. This fund was also expended for gifts and some of it went to the "lame ducks," those who were behind their allotment.

"Did you generally have good luncheons?" asked Mr. Lindabury.

"Yes, we generally did," replied Mr. Worth.

"Did you have champagne?"

"I don't recall the menu right straight through, but the dinners were all right."

Unable to Get Plates

Charles S. Trench, editor of the *American Metal Market*, and president of C. S. Trench & Co., was called and in reply to Mr. Corneau's questions replied that he was selling agent of the Norristown Tin Plate Co. from 1892 to 1896. After that year, he was proprietor of the company. Mr. Trench named a

number of companies from which he had secured black plate for dipping before the formation of the American Tin Plate Co. in 1898. After that event, he was unable to get them from the American Tin Plate Co., as that company had none to spare.

Prices Not Exorbitant

Mr. Severance conducted the cross examination of Mr. Trench in the afternoon.

"At the time the American Sheet & Tin Plate Co. purchased your plant at Norristown, did it not also purchase a patent from you?"

"It did. It was a patent on a process for coating black plate with tin and lead for making roofing plate."

"What price did you receive for your property?"

"I received $50,000 for both the plant and the right to the patent."

Mr. Trench stated that under the circumstances then existing he believed this to be a fair price, inasmuch as the plant was practically worthless.

"Did you ever hear that the American Tin Plate Co. went into the market to purchase black plate because it was not able to make enough for its own supply?"

"I did not. I do not see where they would have secured it unless they went abroad for it, which was probable."

"Are Trench & Co. regarded as large brokers of pig tin?"

"They are the largest in this country," answered Mr. Trench.

"Do you sell to the American Sheet & Tin Plate Co.?"

"It is the largest consumer in the world, but it does not buy directly, the pig tin for the Corporation being purchased by the United States Steel Products Co."

"Did you ever purchase pig tin from the Steel Corporation for the purpose of supplying it to competitors, who were unable to secure tin owing to corners in the market abroad?"

"Yes."

"Did the Corporation ever exact an exorbitant price or refuse to aid its competitors when possible?"

"It did not."

Mr. Severance then questioned the witness concerning a number of independent tin plate companies which were formed since the organization of the American Tin Plate Co., endeavoring to show that in spite of competition with the American Tin Plate Co. and later with the American Sheet & Tin Plate Co., they have been able to greatly increase their capacities.

In re-direct examination by Mr. Corneau, the witness was further questioned concerning the sale of pig tin by the Steel Corporation to its competitors, counsel endeavoring to show that the Corporation had made profit in these deals. The witness, however, stated that, while the Corporation, of course, charged more than it had paid for the tin, its price was considerably less than the exorbitant figure asked by the few brokers in this country, who had stocks of pig tin.

Mr. Trench was questioned concerning the number of mills owned by the American Tin Plate Co. during the first few years of its existence. At the time of its formation, it began with a total of 276 mills; while existing contracts called for the erection of ten more. About 40 additional mills were purchased and 40 additional new ones erected. The mills dismantled numbered 135; of these, about 35 were destroyed and the others re-erected.

Bessemer Plant to Resume

Harrisburg, Pa., June 11.—With the steady increase in business at the plant of the Pennsylvania Steel Co. here, improvements are being constantly made, and it is announced that some changes are contemplated in the merchant mill. The rolls will be overhauled and additional facilities will be added to the machinery.

The Bessemer plant will be started on June 17 and has already been put in good shape. It will be worked on the duplex system in connection with the open-hearth. The plant was closed on Aug. 17, 1910, and has been idle since that time. No Bessemer rails have been made here since Nov. 30, 1907.

Ore Receipts

Out of total ore shipments of 5,919,074 gross tons last month, 4,156,598 tons came to Lake Erie ports, distributed as follows:

Port.	April, 1912.	May, 1912.
Buffalo	4,263	508,601
Erie	.....	36,986
Conneaut	.....	1,112,787
Ashtabula	7,951	911,544
Fairport	.....	97,917
Cleveland	9,378	760,379
Lorain	.....	501,781
Huron	.....	27,266
Sandusky	.....	.....
Toledo	8,807	165,657
Detroit	.....	33,680
Total	30,399	4,156,598

Will Soon Blow In.—The new charcoal blast furnace plant which is under construction at Wells, Mich., is expected to be in operation about the middle of July. The furnace will be in charge of Charles H. Schaffer, who is also connected with the East Jordan furnace, East Jordan, Mich. The plant will have a capacity of from 50 to 60 tons daily and the output will be handled by Pickands, Brown & Co. of Chicago.

STEEL BAR MILLS

Will Supplant Obsolete Plants of Republic Iron & Steel Co.

New York, June 12. (By wire.) — Chairman Topping of the Republic Iron & Steel Co. officially announces that the company's executive committee has authorized the construction of four new modern merchant steel bar mills at the Brown-Bonnell works, Youngstown, to supplant the obsolete mills at this plant and at the Mahoning Valley plant. Upon the completion of the improvements, the Mahoning Valley plant will be abandoned and dismantled and the complete rehabilitation of the Brown - Bonnell works on a modern steel basis will have been accomplished. The construction of by-product coke works of 1,000 tons daily capacity is also authorized, which will place all the northern blast furnaces of the company on practically a self contained basis. Waste gas from the plant will be devoted to the needs of the Haselton plant. Bonds to the amount of $2,000,000 have been sold to finance the improvements. The finishing capacity will be increased by improvements and coke output added to by 70 per cent.

Will Abandon Iron Mills

Pittsburgh, June 11. — Announcement is made that the Brown-Bonnell plant of the Republic Iron & Steel Co. at Youngstown will shortly abandon the last four iron mills located there, and the company will confine its operations at this plant entirely to steel. The Brown Bonnell works originally consisted of one puddle mill and plate and nail factory. No. 2 mill was then added and No. 3 came later with No. 4 as another puddle mill being the latest addition of the iron plant. The decision to scrap these old mills was reached on Monday of this week, and was announced by J. W. Deetrick, general manager of the operating department of the Republic Iron & Steel Co.

Will Build Steel Works

Pittsburgh, June 11.—The Whitaker-Glessner Iron Co., of Wheeling, has secured a tract of 50 acres in Ohio, six miles north of Wheeling, W. Va., where plans are being prepared to install a large steel works, with a converting mill. The details have not been completed, but it is estimated that $1,500,000 will be expended in the new work, and the works will be operated in conjunction with their plants in Wheeling.

How Cambria Steel Co. Safeguards Its Employes

Ingenious Devices Installed in the Great Johnstown Iron and Steel Works for the Prevention of Accidents

That no expense is spared in the installation of devices to safeguard employes from accidents in the great Johnstown works of the Cambria Steel Co. is indicated by the special equipment described and illustrated in the accompanying article. To interest the workman and to have them share a part of the burden of responsibility, accident prevent committees, with authority to criticize existing shop conditions and to suggest safety appliances, are appointed from the ranks in every department. For more than two decades Cambria has sought to prevent the loss of life and injury to its operatives. It is believed that the first polyglot danger signs displayed in any iron and steel plant were adopted by the Cambria Iron Co. more than 20 years ago, and the sanitary drinking fountain of today bears a striking resemblance to the overflowing water cups designed by Cambria many years ago. This work has been carried on without ostentation and perhaps for this reason, or more probably because they did not care to be enlightened, was overlooked by the professional muckrakers who investigated some features of iron and steel trade industrial conditions in their customary amateurish manner.

FOR more than 20 years the problem of accident prevention has been given careful consideration in all of the departments of the Cambria Steel Co., Johnstown, Pa. What is believed to be the first polyglot danger sign used in any steel plant was issued by the Cambria company in 1889, and several of these are still in use. Sanitary drinking fountains, similar in design to those now recommended by health authorities, were installed many years ago, and numerous safeguards which are now being generally adopted in manufacturing establishments are of Cambria origin. In every department of these great works, safety devices of practical value have been adopted and every new machine installed is safeguarded with a view to reducing to a minimum the possibility of accident. Signs are displayed at points of greatest danger, but their wide distribution is avoided to prevent the workingmen from growing careless as a result of being warned too frequently. That safety has been effected is indicated by the decrease in the number of accidents, and those which occasionally occur are minor, the fatalities being few in comparison with the large number of men employed, which varies from 15,000 to 20,000. Safety work is in charge of the company's engineering department, and in laying-out additions and extensions, accident prevention is given due consideration, thereby effecting a big reduction in the cost of the installation of the necessary devices. To a large extent the safeguarding is in the hands of the workingmen, as safety committees organized from among the employes of each department, not only criticize existing shop conditions, but also suggest the installation of devices for the prevention of accidents.

In the accompanying illustrations are shown a few of the many safeguards of the Cambria works. Great ingenuity has been displayed in their design and the underlying principles of their construction make them

FIG. 1—WIRE CAGE ON COALING STATION

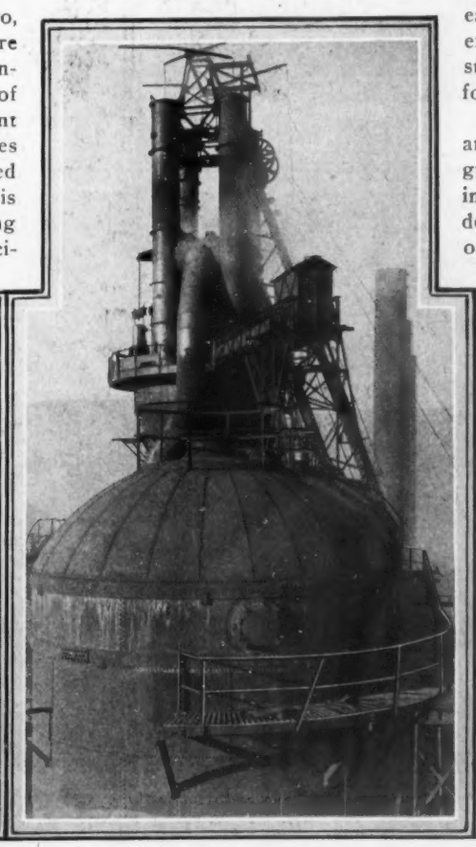


FIG. 2—SAFETY HOUSE ON BLAST FURNACE TOP

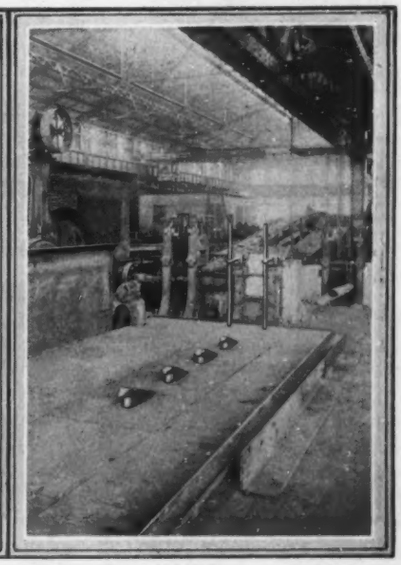


FIG. 3—STEEL UPRIGHTS FOR PROTECTION AT MERCHANT MILLS

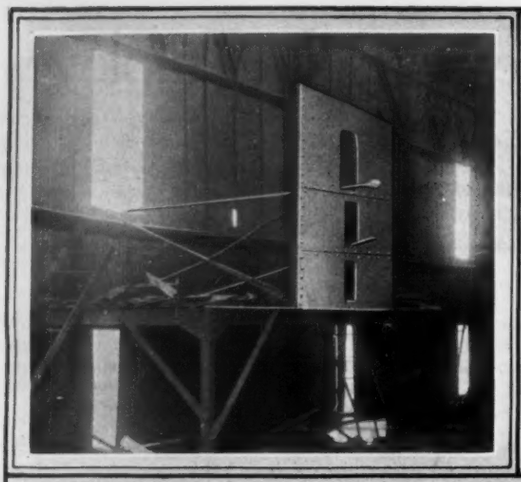


FIG. 4—PROTECTION SHIELD FOR LADLE SKIMMERS

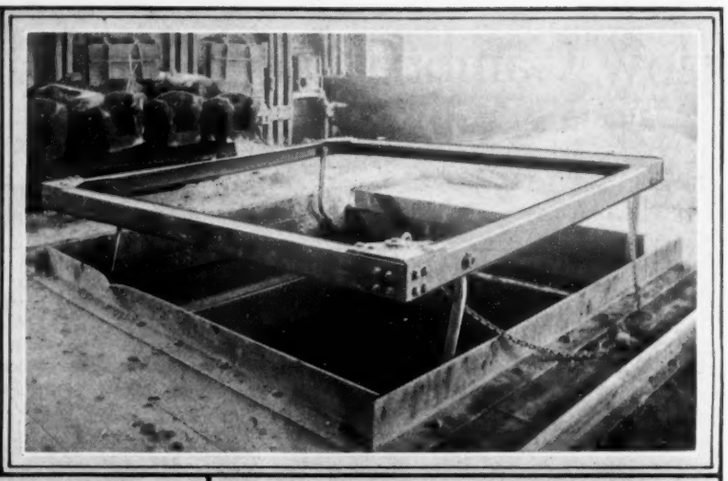


FIG. 5—DISAPPEARING RAILING OVER OPEN-HEARTH CHARGING FLOOR OPENING

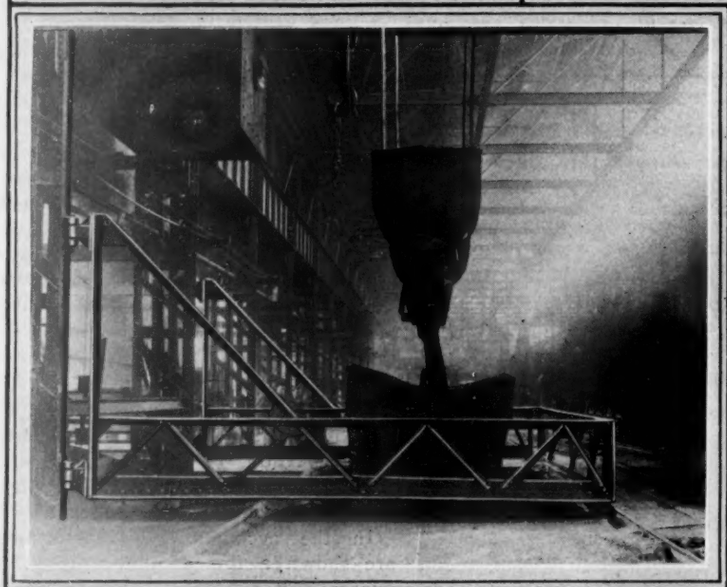


FIG. 6—SWINGING GUARD RAILING OVER CHARGING FLOOR OPENING

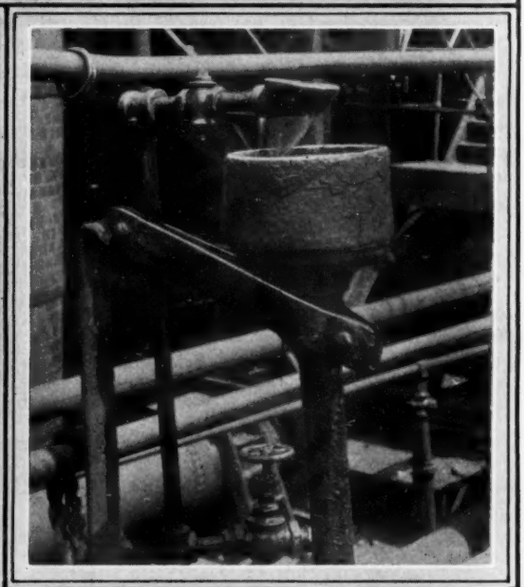


FIG. 7—ONE OF THE SANITARY DRINKING FOUNTAINS

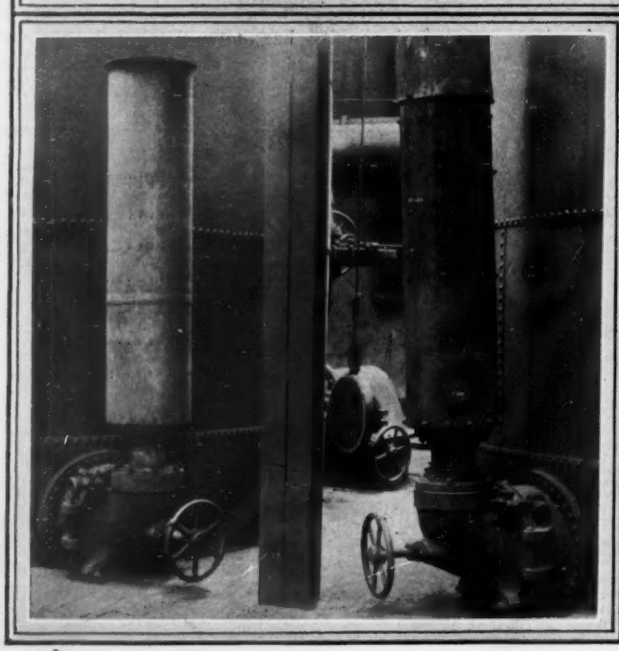


FIG. 8—MUFFLERS ON HOT BLAST STOVE RELIEF VALVES

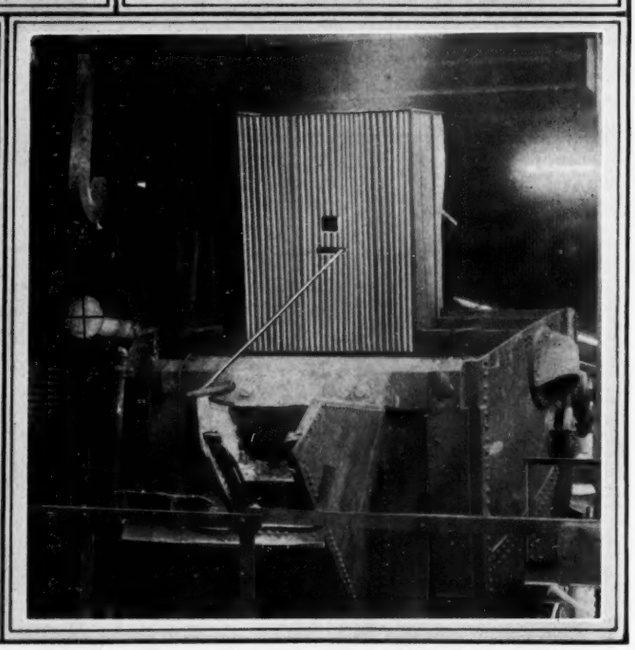


FIG. 9—HOUSE ON MIXER FOR PROTECTING THE LADLE SKIMMER

readily adaptable to similar work in other plants.

A wire cage to prevent workmen from falling from the discharge floor of a boiler house coaling station is shown in Fig. 1. The coal is received from the mines over an aerial rope haulage system and the contents of the buckets are dumped into a hopper which discharges into the boiler house. As one end of the coaling station must be left open for the passage of empty buckets, the lives of the workmen were endangered, but now in the event of one of the employes stepping from the coaling station floor, he falls into a net which also is provided with side enclosures of wire netting. The cage as shown at the left of Fig. 1, consists of an extension to the coaling station, substantially built of steel shapes which support the wire netting.

A safety house installed on a level of the blast furnace charging floor for the protection of men who are on the furnace top in the event of a slip, is illustrated in Fig. 2. The passageway to the house is built on top of one of the stoves. The merits of this precautionary measure are apparent to all familiar with blast furnace operations. The house, which is a steel plate structure, affords an ample safeguard, regardless of the severity of the explosion.

When rolling light sections in merchant bar mills the danger of serious burns being received by the rollers and catchers is always present. If the bar misses the snubbing posts, the operators, unless extremely agile, are liable to have their legs seriously burned. To obviate this danger, all light bar mills have been equipped with uprights attached to the pinion or roll housings, as illustrated in Fig. 3. If the bar fails to pass around one of the snubbing posts and the operator is endangered, he steps inside the space between the uprights and thus is protected from the rapidly moving bar. The bars extend a sufficient distance from the housings to protect effectively the operator when the bar strikes the uprights after having failed to pass around one of the snubbing posts.

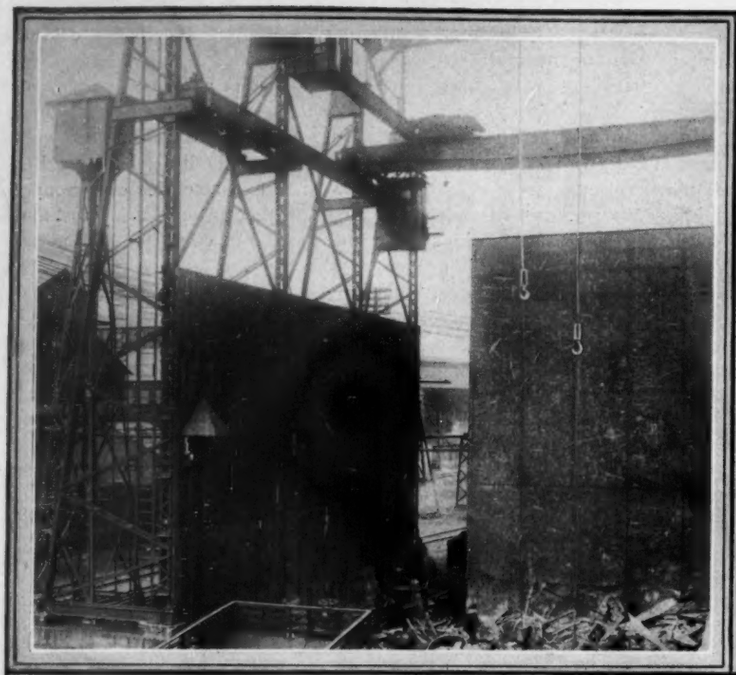
Protection shields for ladle skimmers are provided at all pig casting machines. One of these shields, constructed of steel plates and with three openings for the skimmers, which also are utilized to guide the work of the operator, is illustrated in Fig. 4. A more elaborate device intended for the protection of the workman skimming a ladle consists of a corrugated sheet metal house built on the hot metal receiver at the receiving end of the mixer, shown in Fig. 9. The skimmer extends through an opening in the house and above it is a sight hole to enable the operator to guide his operations. This affords ample protection against serious burns received frequently by the workman while the mixer is being filled with molten metal.

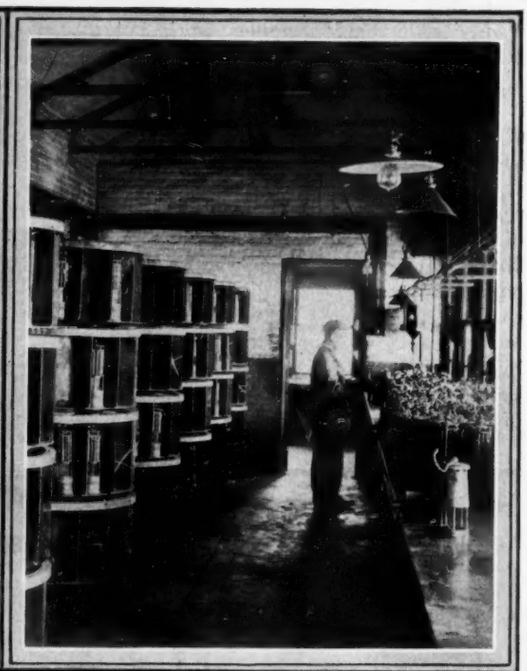
All floor openings are safeguarded with railings, and one of the counterweighted disappearing type over an opening in one of the open-hearth charging floors, is illustrated in Fig. 5. As the railing, in the position shown, would impede the passage of the charging machine, it is designed so that it can be lowered into the opening during the passage of the

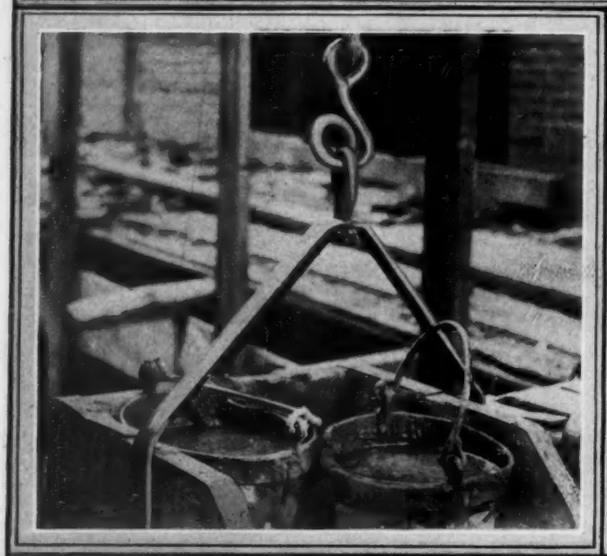
FIG. 10—TYPE OF DANGER SIGN USED BY THE CAMBRIA STEEL CO.

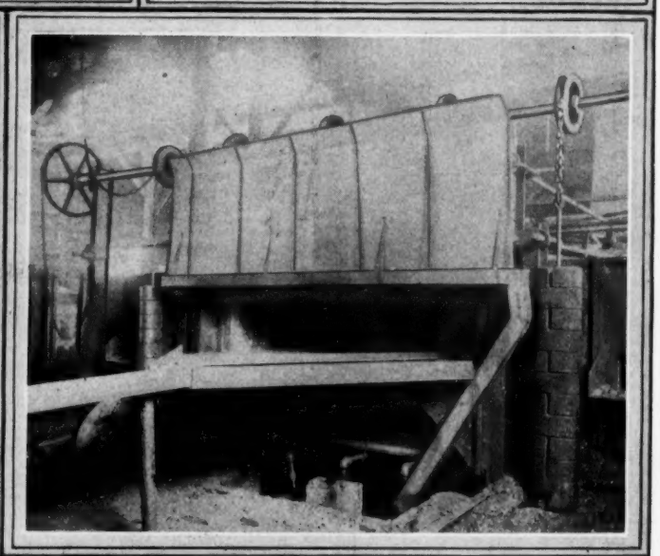
FIG. 11—DANGER SIGNS OVER PASSAGEWAYS NEAR TRACKS

FIG. 12—DERAILERS ON TRACKS EXTENDING INTO BUILDINGS









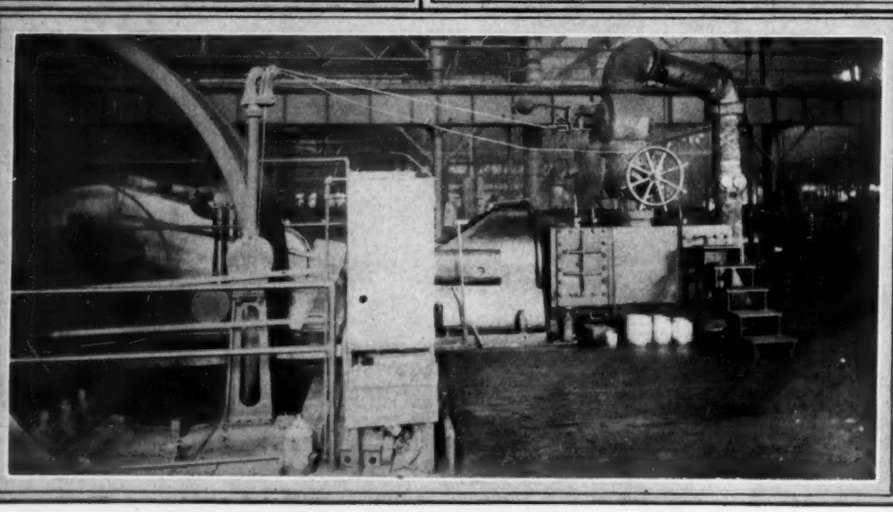


FIG. 13—PROTECTION AFFORDED SCRAP BREAKERS

FIG. 14—INTERIOR VIEW OF MINERS' LAMP HOUSE

FIG. 15—SAFETY HOOK CRANE EMPLOYED ON CONSTRUCTION WORK

FIG. 16—WATER-COOLED SHIELD FOR HEATING FURNACES

FIG. 17—STEAM ENGINE PROVIDED WITH AN EMERGENCY STOP

machine. A swinging guard railing over a charging floor opening is illustrated in Fig. 6. It is supported on hinges atttached to the columns and is swung aside to permit the passage of the charging machine. At all times, however, other than when charging the furnaces, these railings are in position.

A type of sanitary drinking fountain, in use for many years, and distributed in large number throughout the works, is illustrated in Fig. 7. The cup is made of cast brass and is of the overflow type. The principle of its design is not unlike that of the more elaborate sanitary drinking fountains in extensive use today. A constant supply of pure, cold water is provided and the fountains are located conveniently and widely distributed so that the workmen are not compelled to walk a great distance to quench their thirst.

Two mufflers used on hot blast stove relief valves are shown in Fig. 8. This device has proved very effective and almost entirely silences the stoves when they are blown-off. Several accidents had previously been caused by their noise, because of the fact that the majority of the stoves are close to running tracks and men have been caught because they were unable to hear approaching trains.

What is believed to be the first polyglot danger sign installed in any steel plant is shown in Fig. 21. Several of these were issued by the Cambria Steel Co. in 1889 and a number are still in use. The type of danger sign now in use is illustrated in Fig. 10. Fig. 11 is one of a type of standard signs erected throughout the plant over passageways where tracks pass close to the fence. The sign is supported on standards and the note of warning is painted on the sign in large letters and in several languages.

Running freight cars over shipping and receiving tracks in various departments without warning the workmen in these buildings has been the cause of numerous accidents. Some of these tracks extending into buildings are provided with derailers which compel the switching crew to stop their trains before switching cars into the various plants. Throwing over the switch controlling the derailer automatically starts an electric bell which rings until the derailer is again thrown over, and warns the men inside of the building in ample time to permit them to get out of danger. These derailers are shown in Fig. 12, which normally are in a derailing position. The switch stands are inside of the buildings and the signal lamps are in the yards opposite the derailers.

Breaking scrap with a drop is always hazardous and many serious injuries are caused by flying pieces of iron and steel. Fig. 13 shows the protection afforded the scrap breakers of the Cambria Steel Co. An A-shaped steel plate wall has been erected at one side of the scrap yard where the material is broken. After arranging the pieces to be broken by the drop, the workmen step inside of the openings in the wall at either end and are amply protected from the pieces scattered about by the impact of the drop. The numerous scars on the steel plate indicate to what extent these small pieces are scattered. The crane

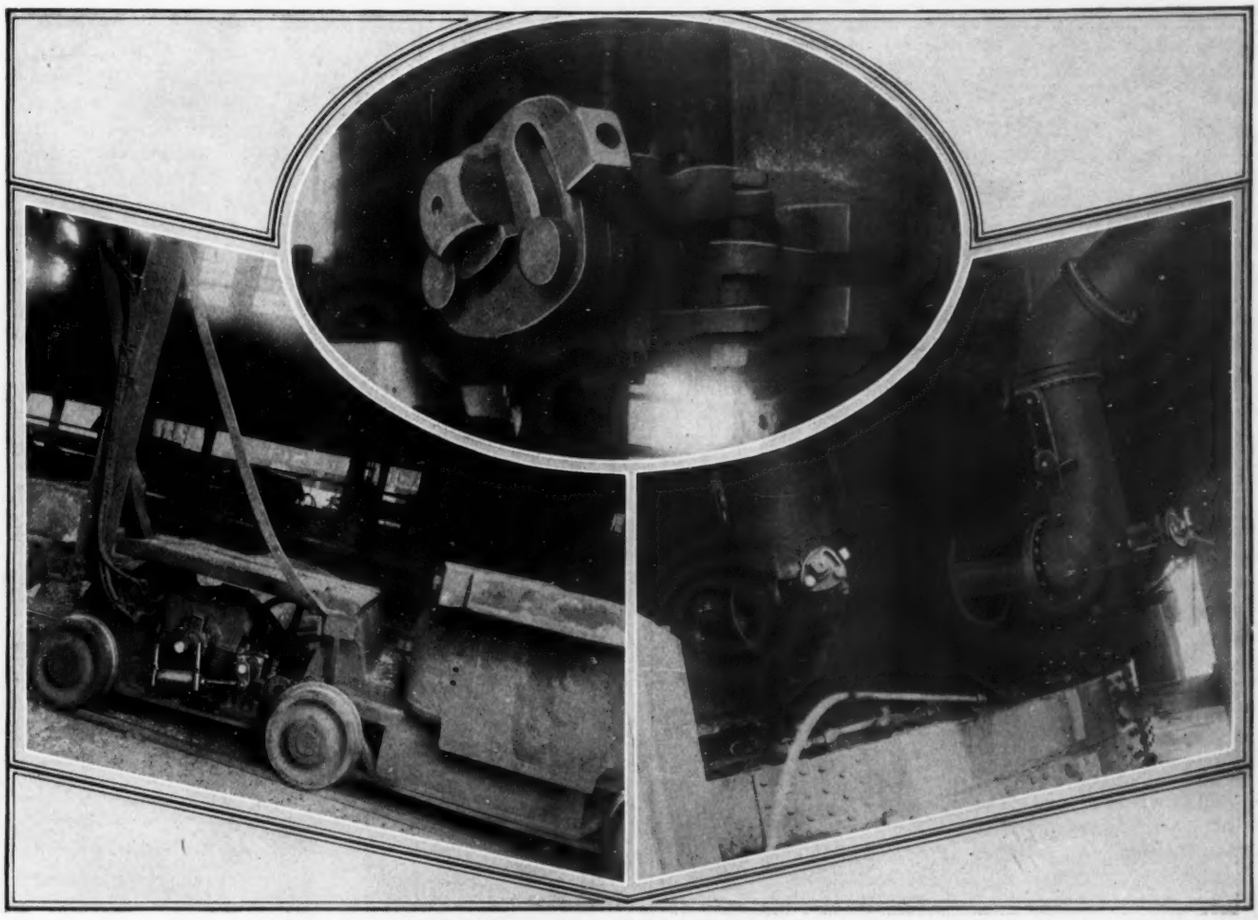


FIG. 18—SAFETY TUYERE EYESIGHT AND EYESIGHT CAP

FIG. 19—INGOT CHARIOT EQUIPPED WITH AIR WHISTLE

FIG. 20—SAFETY TUYERE EYESIGHTS AS ATTACHED TO BLOWPIPES

runway also is protected with wood planks to prevent the pieces from striking adjoining buildings, thereby eliminating the danger of injuring men in other departments. The yard is served by two cranes, one on the upper and the other on the lower level of the runway.

The Cambria Steel Co. also operates a number of large coal mines which are fully provided with the most modern safety devices for underground operations. Fig. 14 is an interior view of a lamp house for miners. After his day's work, each miner is compelled to turn in his lamp for cleaning, filling and testing. Each miner thus is insured an absolutely reliable safety lamp and the company knows that each lamp has been properly cared for. Notwithstanding the hazards of his vocation, the average miner will not properly care for his lamp when burdened with this responsibility. The lamps are so constructed that when locked in the lamp house they cannot be opened by the miners. The lamps are magnetically-locked from the inside. On construction work throughout the plant a safety crane hook is employed, as illustrated in Fig. 15. The hook is of the corkscrew type and while a bail can be inserted easily, it cannot be shaken out by a sudden jar and the hook can be released only by turning it out of the bail by hand.

All small heating furnaces are equipped with galvanized steel, water-cooled shields, shown in Fig. 16. The front of this shield is sprayed with water which collects in a gutter and is carried off into a sewer by the pipe at the right. The workmen are protected from the intense heat of the furnace when charging and discharging, and the great discomfort of this work, particularly in hot weather, is ameliorated by this simple water-cooling device. In view of the fact that the steel is handled by mechanical devices in large heating furnaces, these are not so equipped.

As an emergency engine stop, the device illustrated in Fig. 17 has been adopted in the Cambria works. It is entirely mechanical and is not dependent upon any electrical contacts or electric circuits. The valve immediately above the throttle valve is held open by the taut rope which leads to the stand close to the belt wheel, at which point it is latched. On the opposite side of the stand at the flywheel is a lever close to the wheel and on the wheel is a weight held in position by a spring. Should the speed of the wheel exceed a predetermined number of revolutions per minute the centrifugal force of the weight overcomes the spring, the weight is brought in contact with the lever in the stationary case, the rope is unlatched and the valve is closed by the weight on the horizontal arm at the valve. This has been in successful use for 10 years. The slack rope in Fig. 17 is an emergency line leading to the engine by which the engineer may trip the latch and close the valve promptly in the case of accident. In some cases a number of these lines are led to different points in the mill.

A safety tuyere eyesight and eyesight cap is illustrated in Figs. 18 and 20. The glass is

FIG. 21—THE FIRST POLYGLOT DANGER SIGN ISSUED BY ANY OF THE IRON AND STEEL MAKING COMPANIES

FIG. 22—SWITCH TO WHICH WIRE IS ATTACHED

FIG. 23—WIRE-DRAWING BENCHES, SHOWING CLUTCH DISENGAGING LEVERS

only brought down in line with the blowpipe when it is actually in use, and being held securely in place, it cannot blow off. The sight is convenient and is easily kept tight.

An ingot chariot, equipped with an automatic air whistle, which is set in operation when the chariot is in motion, is shown in Fig. 19. The whistle is attached to an extension on the motor jack shaft and is operated by air. The sound emitted by this whistle is unlike that of other whistles around the plant and workmen are sharply warned of the approach of these chariots, which are electrically-operated at considerable speed.

To protect wire drawers from being caught in a tangle and from being pulled against the wire drawing blocks, an ingenious device has been installed. In front of the wire-drawing benches and at a height of about 7 feet above the floor a wire is stretched which extends entirely across the mill. The wire is attached to a normally closed switch on the wall of the motor house, as shown in Fig. 22. This switch is connected to the no-voltage release coil of the circuit breaker of the main 300-horsepower alternating current motor driving the benches. In the event of an operator being caught by a tangle or in any way being drawn toward the bench, this wire is within easy reach and readily shuts down the bench. If the man who is caught cannot do this, one of his companions can do so. Being driven by a motor and having very little flywheel effect, the benches are stopped in less than one revolution of the block. This device has saved a number of men from serious accidents. A similar device is installed at the cobble baller and is installed on the galvanizing take-up frames. Clutch disengaging levers also are provided immediately in front of the die plates. Should a man be caught and be unable to reach the wire when he is drawn against this lever, the block is disengaged. Two of these levers are illustrated in Fig. 23. This view also shows the safety wires in front of the drawing benches and the guards at the end of the bench and over the pointers. The large, semi-circular plate, *A*, at the end of the bench is a protection around the stairway which leads beneath the benches, guarding against the loose end of the wire on the blocks striking any one who may be coming out from under the benches.

To protect employes repairing, greasing or inspecting machinery, blue flags are set up indicating that the machinery is not to be operated. The penalty for the removal of one of these flags by other than the employe who set it in position is immediate discharge. Blue flags of four different shapes are used by the car inspectors and railroad, electrical and mechanical departments and all other departments of the works, respectively.

Unsuitable clothing, such as ragged sleeves, loose neckties and similar apparel, leads to a great many of the minor and not a few of the more serious accidents. The Cambria Steel Co. is making a determined effort to eliminate as many accidents due to this cause as possible. To this end, enameled signs have been placed at each check box so that the employes face these signs when going to work. These signs bear the following inscription:

CAMBRIA STEEL COMPANY

WARNING

ALWAYS EXAMINE YOUR CLOTHING BEFORE COMMENCING WORK. RAGGED OR LOOSE CLOTHING, UNBUTTONED JACKETS OR SHIRTS, LONG NECKTIES AND LOOSE SLEEVES ARE

DANGEROUS.

It is hoped by calling attention to the danger of such clothing in this way a large percentage of the accidents of this type may be eliminated.

Motion Study and the Economies it Effects[1]

By Charles S. Miller

Motion study is a valuable and useful instrument to use in performing the operation of cutting costs. It is also a dangerous instrument for two principal reasons:

(1). It takes time to make motion studies, and a great deal of money can be very quickly spent in making observations which may develop later as having little or no practical value.

(2). Unless the workmen are handled right, they are apt to get the impression that the studies are being made with the sole purpose of cutting rates.

I have known of serious labor troubles being caused by untactful attempts at motion and time studies, but in my experience I have never once known of any objection on the part of the workmen to motion study or to any applications of any of the principles of scientific management, when they were handled in the proper manner and given a clear conception of the ends sought.

Difference Between Motion and Time Studies.

In the mind of the uninformed there is apt to be some confusion between motion and time study, so let me say a word regarding the difference between them. We might say the former is qualitative and the latter quantitative. Motion study analysis determines the proper elementary motions necessary to accomplish a certain act. It eliminates all unnecessary motions and determines the arrangement of the work to enable the operator to execute the sequence of motions with the least expenditure of effort and time. It is a motion study that affects savings.

Time study is measure; it determines standards by which we can measure the relative efficiency of the old and new methods. It serves as the basis in setting prices on piecework or the standard time on bonus work.

We know that a man on a bicycle travels faster than a man walking. How much faster we do not know until after timing each over a given distance.

Time study is complementary to motion study. It is necessary so that we may establish standards which must be lived up to by the operator and these standards can only be reached by operators working under this new method.

The question of *nailing down* the new way of doing work is all-important. It is human nature to prefer to continue walking rather than go

[1]Presented at the convention of the American Supply & Machinery Manufacturers' Association, held at Norfolk, Va., May 13-15.

to the trouble of learning to ride a bicycle—though the new method of locomotion will enable one to cover many times the distance with no greater expenditure of effort or time.

To the average workman it seems too much trouble to make the effort to break away from the old method of doing his job and working his mind long enough to create brain channels that will telegraph the new motions to his hands.

Written instructions, wage incentive, personal direction, and, for a time at least, constant supervision, are all necessary. In the case of much foreign labor the work must be done without the written instructions to the workman. After a time increased wage return, less fatigue and the habit formed of doing the work in the correct way, insures the performance of the operation in the standardized manner. The matter of training workmen in habits of industry, in the doing of their work in the proper manner, has a humanitarian as well as a commercial aspect.

One feature of time study is worth mentioning, though it is oposed to the fundamental principle of mutual confidence between employer and workman; it is practically impossible for an operator to fool an experienced motion and time study man by soldiering on a job under observation.

In addition to establishing a standard method of accomplishing a job, motion study brings the individual workman under close observation, and this enables the employer to *fit the workman to the job.* It makes possible the consideration of the personal equation of the operator in selecting him for a certain operation.

I will now give two examples of motion study taken from actual practice, these studies representing an application to two distinct types of work, as follows:

1. Hand-operated machine work.
2. Automatic machine fed by hand.

Comparatively simple operations have been chosen, both on account of the greater clarity in description and because it is in the simpler operations that often lies the opportunity of greater economy in movement than in ones of more complexity.

Operation.—Making final sizing cut on taps and gaging diameter of top and bottom of threads. The cut is made on a vertical drill press with a die set in the bed plate and the tap is gripped in the chuck and forced down through the die, falling into a pan under the press. The work is gaged in two pass and stop gages placed on the left of the bed of the press. By the old method the unfinished work was in a box on the left of the machine; the finished work in a box on the right. The sequence of motions was as follows:

1. Reach two feet to left of box of unfinished work.
2. Pick up tap with left hand.
3. Bring tap to chuck.
4. Slip squared end of shank into chuck with left hand.
5. Reach over with right hand and lower head of press, passing tap through die until it falls into pan under press.
6. Reach under press with left hand and pick up tap.
7. Lift tap from pan to gage on left of press.
8. Pass through gages.
9. Transfer tap from left hand to right hand.
10. Put in box of finished work.

New Method

Now for the new method. The box of unfinished work was placed closer to the operator and the box of finished work placed beside it on the left side of the press. A small sheet iron chute was placed under the press so the tap would slide to the front when it fell from the die. The right hand of the operator grips the lever of the head continually.

Starting with the operator gripping this lever with his right hand and his left in the box of finished work where he has just placed his last finished piece, the new sequence of motions is as follows:

1. Move the left hand about six inches towards the chuck to the box of unfinished work.
2. Pick up tap with left hand.
3. Bring tap to chuck.
4. Slip squared end of shank into chuck with left hand.
5. Lower head with right hand passing tap through die. While doing this with the right hand, execute the following motions with the left:
   a. Pick up previous tap from pan between knees.
   b. Lift tap to gages.
   c. Pass through gages.
   d. Reach to box of finished work and lay down tap.

In this operation a saving of 50 per cent in the time was effected by the new method. A $1.50 a day man was sizing about 700 pieces per day, costing the company about 21 cents per hundred. By setting a piecework rate of 14 cents per hundred, the operator was able to earn approximately $2.00 per day by the new method, and the company saved one-third of the direct labor cost of the operation.

Now let us consider an automatic machine operation in which the work has to be fed into the machine and removed by hand, the machine doing the rest. The operation chosen here is that of grinding reamers to a gage size, there being required two grindings, the roughing and finishing. The grinding was being accomplished in two distinct operations, the grinder being set first for the roughing grind and a lot of several hundred put through, then changed for the finishing grind and the lot put through the second time. The work was placed in a dog, inserted in the carriage chuck, clamped and the carriage traveled forward and back automatically. During this time the operator took the dog off the last accomplished piece of work, put this piece in a box, picked up another piece of work, put on the dog, then *sat* until the grinding was finished.

By the old method the sequence of motions and the unit time of each motion was as follows:

	Minutes.
1—Pick up reamer and attach dog	0.09
2—Stop machine, take out and put in work and start machine	0.13
3—Grinding (automatic)	0.30
4—Remove work from dog and put in box	0.07

Operations 1 and 4 are accomplished during (3) so that the elapsed time for one cycle of operations was 0.43 minutes, during which the operator was idle 0.14 minutes or one-third of the total time. Thirty-three and one-third per cent *rest* in this instance was very considerably more than a man required to work without undue fatigue. The problem was how to utilize this idle time—0.14 minutes in every 0.43.

As two grinds were necessary to bring the reamers to final size, the sequence given was repeated, the machine being readjusted after the first lot was finished. It will be noted then that the total time for the two grinds on each piece, exclusive of any time for machine set up or adjustment, personal needs of the operator etc., was 2×0.43 equals 0.86 minute.

As this example is for comparisons of the actual machine time between the old and new methods, the factors outside of this are not discussed, though careful study would have to be made of same before setting a standard task.

By the new method the operator will be provided with two machines, indicated hereafter as machine *R*, for roughing grind, and machine *F* for the finishing grind. The machines should be set face to face about four feet apart.

Starting at machine *R*, the sequence of motions and the unit times of same would be as follows:

	Minutes.
1—Pick up reamer and put in dog	0.09

2—Stop machine, take and put in work and start machine 0.13
3—Grinding (automatic) 0.30
4—Turn and step to machine *F* 0.02

At Machine F.

5—Stop machine, take out and put in work and start machine 0.13
6—Grinding (automatic) 0.30
7—Remove dog and put finished reamer in box 0.07
8—Step to machine *R*..... 0.02

Remembering that the operations 3 and 6 are automatic, we find the sum of the time of the other operations to be 0.46 min. for completing both grindings.

The comparison would consequently be as follows:

	Minutes.
Old method time per 100 pieces, two grindings	83
New method time per 100 pieces, two grindings	46
Saving	37
Per cent time saved	44½

In this particular case two additional factors must be considered:

1. Will the volume of work be sufficient to bring justifiable returns on the investment in one additional machine?

2. What percentage of time will the machines lie idle between the time the grinding is automatically completed, and the workman gets the machine started again? In this case we find that it takes the workman 0.33 minutes to complete his cycle of operations from the time the machine is started until he returns to unload and load the machine. As the automatic operation requires only 0.30 minutes, there will be 0.03 minute lost on each machine on each operation, or the machine efficiency will be 91 per cent as compared with the old methods.

Assuming that there is sufficient work to keep both machines busy, that each machine costs $250 and that 20 per cent of this cost is the yearly charge for repairs and depreciation, we find the yearly cost of the additional machine to be $50.

A 20-cent an hour man was doing this work; his income, working full time, would be $572 per year. Deducting 20 per cent from this as the amount paid for unproductive time, that is, time for setting and adjusting machines, personal needs, etc., and taking 44½ per cent of the result, we find a saving in labor by the new method of $210 per year. Deducting the $50 machine cost, the company would save on this one simple operation $160 per year, the interest on $2,667 at 6 per cent.

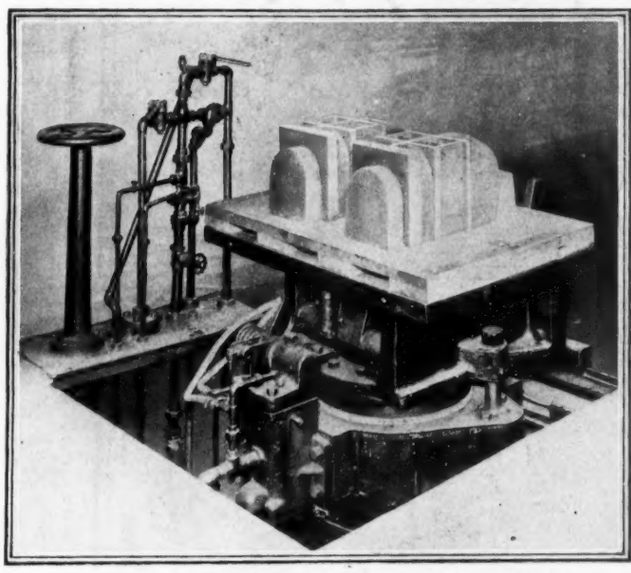


FIG. 1—SHOCKLESS JARRING, ROLL-OVER AND PATTERN-DRAWING MACHINE READY TO RECEIVE THE FLASK

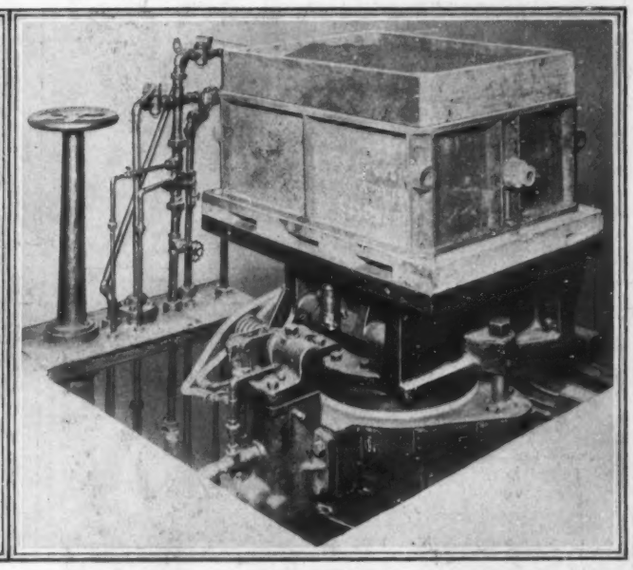


FIG. 2—SAND FRAME AND FLASK IN POSITION ON THE PATTERN PLATE AND FILLED WITH SAND

Shockless Jar-Ramming, Roll-Over and Pattern-Drawing Machine

A combination shockless jarring, roll-over and pattern-drawing machine of an exceedingly ingenious design, is now being built by the Tabor Mfg. Co., Philadelphia. This type of molding machine is especially adapted for work requiring a deep flask and for patterns having very little draft. The ramming of the mold is effected by jarring, the machine being of the shockless type and has incorporated in it all of the features of the Tabor shockless jarring machine. Only sufficient foundation is required to carry the dead weight of the machine, together with the flask that is to be handled. The main valve for the jarring operation is of the piston type, especially designed for the service it is to perform and is governed by a piston valve.

The piston in the main valve is actuated in both directions by intermittent air pressure supplied through the pilot valve, thus giving the delayed action required for a complete exhaust and thereby not subjecting the main valve to the impact of reversing stops. The quick admission of air at full working pressure permits of its use expansively with table loads less than maximum, thus maintaining a completely uniform efficiency per cubic foot of sand rammed, regardless of the weight of the load.

A view of one of these machines with the pattern board in place ready to receive the flask is shown in Fif. 1. The molding machine illustrated has a capacity for handling molds having a total weight of 2,000 pounds and has 12-inch straight pattern draft.

In Fig. 2 the flask and sand frame are in place and are filled with sand ready for jarring the mold, the machine striking blows automatically at the rate of approximately 110 per minute. After the mold has been jarred, the frame is removed and is butted-off, the bottom board being rubbed in place and clamped. The valve operating the roll-over is then thrown open, thus rolling over the mold onto the receiving table ready to be bedded preparatory to drawing the pattern. In Fig. 3 the mold is shown while it is being rolled over and in Fig. 4 the rolling over operation has reached its final limit and the mold is in position to be bedded.

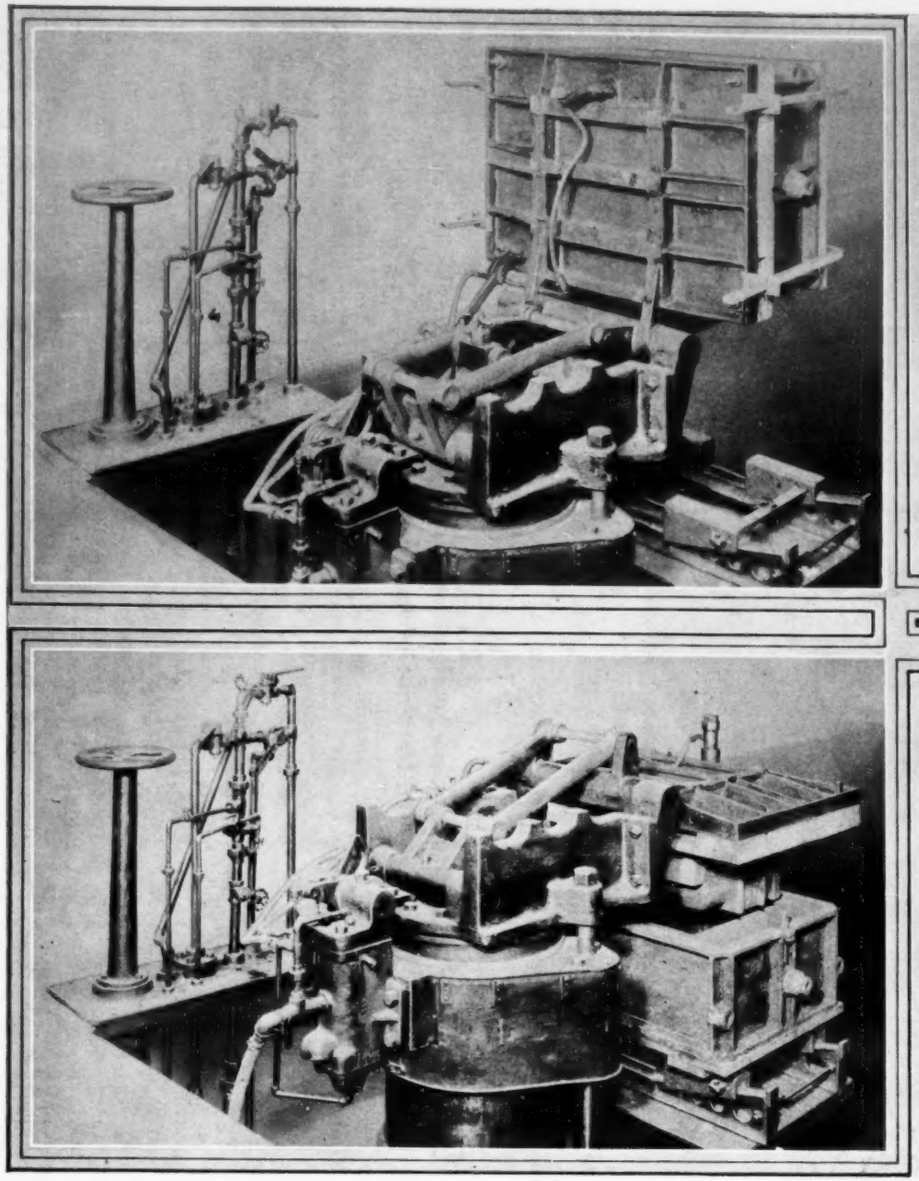


FIG. 3—A VIEW OF THE MOLD WHILE IT IS BEING ROLLED OVER

FIG. 5—THE PATTERN DRAWN VERTICALLY FROM THE MOLD

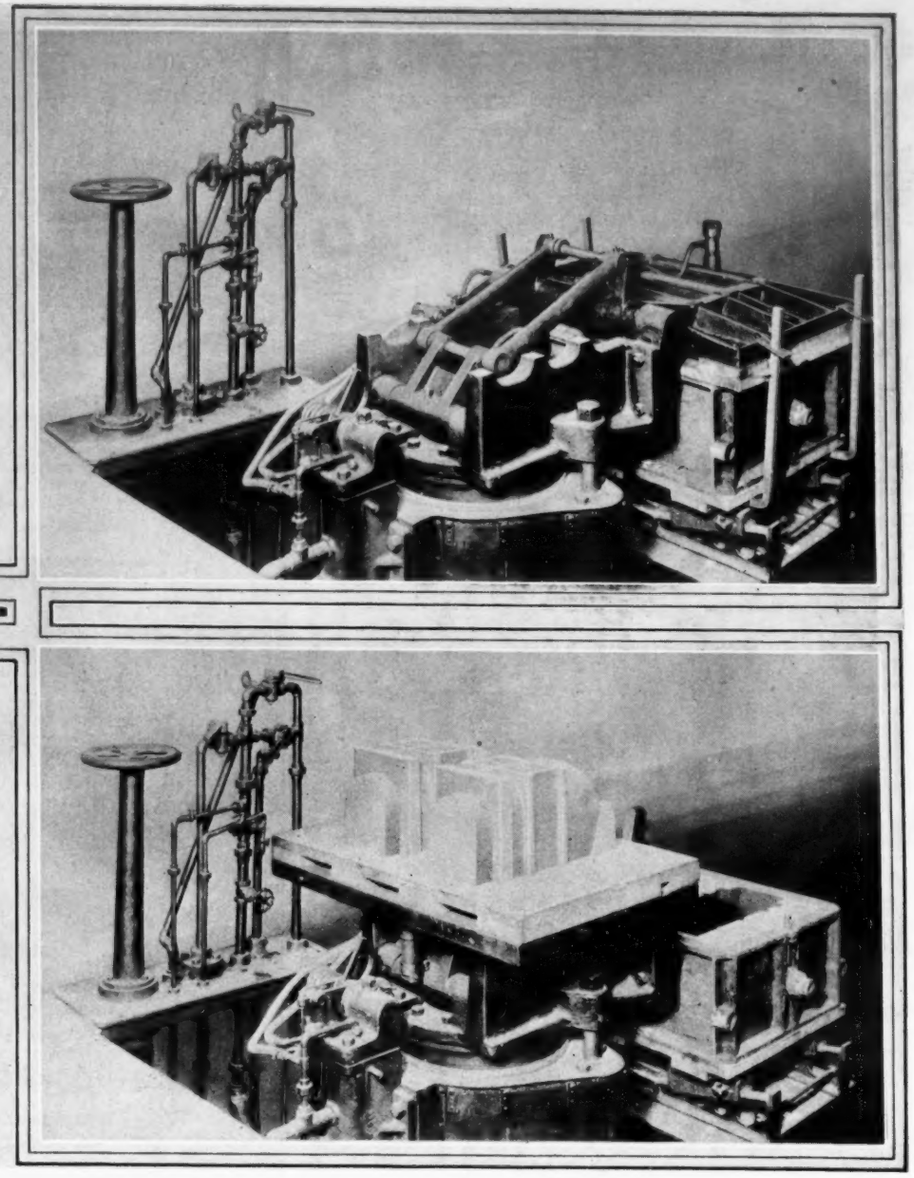
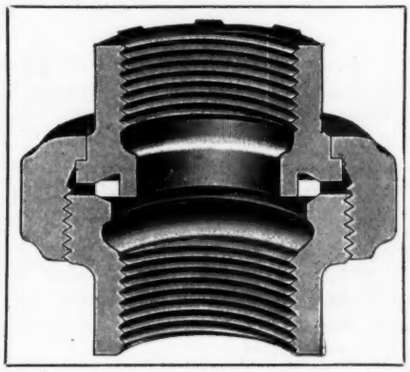


FIG. 4—THE FLASK IN PLACE AND BEDDED READY FOR THE CLAMPS TO BE REMOVED AND THE PATTERN DRAWN

FIG. 6—MOLD READY TO BE LIFTED OFF AND THE PATTERN RETURNED TO ITS ORIGINAL POSITION

The method of bedding the flask after it is rolled over is exceedingly simple and quick of operation. The receiving table, which is mounted on a movable guide and is raised and lowered by a hand wheel, shown at the left of the operating stand in the various illustrations, is adjusted to the proper position to receive flasks of the depth in use on the machine, being left in this position until a flask of a different depth is employed. When the mold is rolled over, the roll-over frame engages with stops that hold the pattern board and the flask in a perfectly horizontal position and the battens of the bottom board do not quite engage with the sliding wedges carried on the receiving table or flask support. When the flask is in this position, a small valve on the operating stand is opened, admitting air to the small cylinder operating the leveling wedges which are arranged in such a manner that when one wedge engages with the bottom board it stops and permits the other wedge to move forward in engagement with the battens, thus insuring the perfect bedding of the flask.



ILLINOIS MALLEABLE IRON CO.'S COMPRESSION DISC UNION

The flask clamps are next removed and the vibrator is set in motion, the pattern being drawn by compressed air operating in the shock-absorbing cylinder which causes the plunger, with its table and roll-over mechanism, to rise vertically until the pattern is clear of the mold. A view of the pattern drawn from the mold is shown in Fig. 5. The roll-over table then returns to its normal position, Fig. 6, ready to receive another flask, while the finished mold is on the receiving table ready to be removed to the floor. All of the operations can be controlled by one man and all of the levers, it will be noted, are conveniently arranged on the operating stand. Several larger machines of the same type are now under construction at the plant of the Tabor Mfg. Co.

New Compression Disc Union

A new compression disc union, manufactured by the Illinois Malleable Iron Co., Chicago, made of air furnace malleable iron and sufficiently heavy to withstand the pressures to which unions of this type are subjected, is shown in the accompanying illustration. One of the features of this union is the brass valve seated disc and it will be noted that the face of each threaded section of the union is beveled to receive the brass disc. When the union is connected, the brass disc is compressed against the two sides, thereby effecting a permanent steam metal seat, the principle being essentially that of seating a valve. All of these unions are tested by air under water by the manufacturer.

Statistics of Carnegie Steel Co.'s Operations

Commemorative of the visit of the delegates of the Twelfth International Congress of Navigation to the Homestead plant of the Carnegie Steel Co. on May 31, a handsomely-illustrated souvenir booklet, containing 60 pages, was issued. It includes a panoramic view of the Carnegie plant at Homestead, together with illustrations of the blast furnaces, electric power station, open-hearth plant, ingot stripper, Bessemer department, soaking pits, rolling mills, etc. The information regarding the operations of the Carnegie Steel Co., given in statistical form, is exceedingly interesting. Some of the principal items follow:

Acreage covered by manufacturing properties and accessories	2,358
Number of employes	37,000
Average monthly pay roll	$2,275,000
Gross tons of ore consumed in 24-hour day	40,000
Gross tons of coke consumed in 24-hour day	19,500
Gross tons of coal consumed in 24-hour day	8,000
Gross tons of limestone consumed in 24-hour day	10,000
Cubic feet of natural gas consumed in 24-hour day	106,000,000
Miles of standard gage railroad track	260
Steam horsepower produced in 24 hours	7,250,000
Electric horsepower produced in 24 hours	850,000
Total production in gross tons in 24 hours	95,000
Gross tons of finished materials produced in 24 hours	23,000

THEORETICAL CAPACITY, IN GROSS TONS, PER YEAR, OF VARIOUS PRODUCTS

Pig iron	8,381,000
Spiegeleisen, ferro-manganese, etc.	108 000
Bessemer ingots	3,930,000
Basic open-hearth ingots	5,058,000
Blooms, billets and slabs	*6,980 000
Flue dust briquettes	120,000
By-product coke	500,000

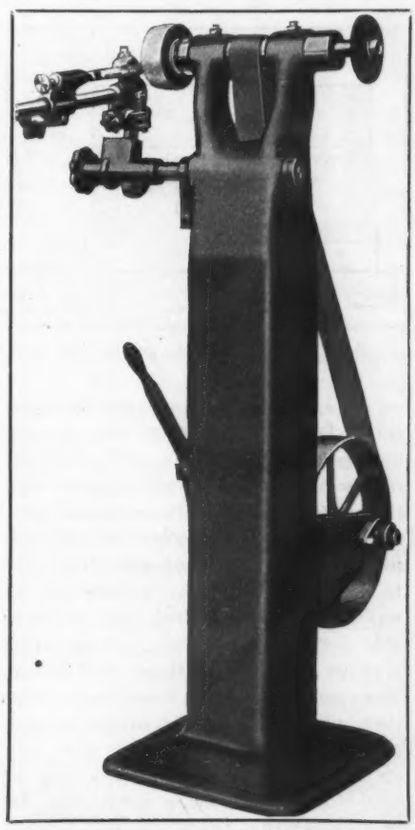
*Tonnage of blooms, billets and slabs is rolled in the various finishing mills to produce 6,760,000 gross tons of finished material.

THEORETICAL CAPACITY IN GROSS TONS PER YEAR OF FINISHED MATERIAL

Sheets and tin bars	1.640,000
Universal and sheared plates	1,220,000
Beams, channels, angles, etc	874,000
Rails	868,000
Axles	180,000
Steel ties	43,000
Steel mine timbers	1,000
Steel sheet piling	15,000
Splice bars	104,000
Slack barrel and keg hoops	18,000
Steel wheels	112,500
Twisted bars	45,000
Merchant bars, hoops, cotton ties, etc.	1,450,000
Tapered spring steel	3,000
Ingot molds, stools, castings and rolls	175,000
Armor plate	12 000
Total	6,760,500

A New Tap Grinding Machine

A new type of tap grinding machine, built by the Wells Bros. Co., Greenfield, Mass., is shown in the accompanying illustration. The grinding mechanism is mounted on a box type pedestal and consists of a swivel and adjustable arm and cup wheel. The countershaft is attached to the pedestal. The tap is held between centers and is swung across the face of the cup wheel when it is being sharpened. The tap is held in proper position by an adjustable spring finger which regulates the angle or clearance to be ground. This machine will grind taps 12 inches in length. The emery wheel furnished with the machine is 4 x 1½ inches and has a ½-inch hole.



A NEW MACHINE FOR GRINDING TAPS

Results of a Series of Chillable Iron Tests[1]

Experiments With Car Wheel and Alloyed Irons to Ascertain Their Chilling Properties—Round and Square Test Bars Compared

By Thomas D. West

A series of tests of chillable irons, made during the period from September, 1911, to the close of February, 1912, are presented in this paper. Before proceeding with the tests it was desired to find what size of bar should be used with different grades of iron to produce a bar of all gray iron and at the same time a companion bar that could be wholly chilled, both having been poured from the same ladle. Tests of two sets of bars indicated that those 1⅝ inches in diameter are suitable for various grades of chillable metal having silicon ranging from 0.90 to 1.20 per cent. The balance of the sets showed that 2¼-inch bars are suitable for many grades of iron having a range of 0.50 to 0.90 per cent silicon. The constituents of these bars, other than silicon, are the same as in such castings as chilled car wheels and rolls. In some cases the larger bars may be used for higher silicon metal, this depending chiefly upon the metal being high in sulphur and without ferro-manganese addition.

While the round bar is advocated as a standard, there are cases of experimental work, such as presented in this paper, where square bars may be advisable, but for ordinary practice, to obtain comparisons of mixtures, grades of metal, etc., the round bars are preferred. For molding the square bars three flasks were used, each adapted for casting three or four bars. These bars were 2 inches square by 24 inches long. For casting the round bars, two chill molds having a bore of 1⅝ inches, bored out to 25-16 inches, were used in connection with two pipe sand molds.

The bars for these tests were poured from the regular metal from a reservoir ladle, with a capacity of about 7 tons, and the iron was carried to the molds in a ladle which held about 250 pounds. Twelve ounces of ferro-manganese were thrown into the ladle to secure the same composition as used for car wheels in which 2 to 2½ pounds of ferro-manganese are added to every 700 or 800 pounds of metal. After the bars were poured with this regular wheel metal the ladle was filled as often as needed and vanadium or titanium, or both together, were added with the 12 ounces of manganese, according to the tests to be made. The ladle was allowed to stand for three or four minutes to permit the alloys to melt thoroughly and to mix with the metal. A ½-inch rod was used to agitate the metal to help bring any oxides created by the alloys to its surface. The ladles of metal required for a set of bars were filled from the reservoir ladle before any additional metal was run into it from the cupola. Both round and square bars were cast.

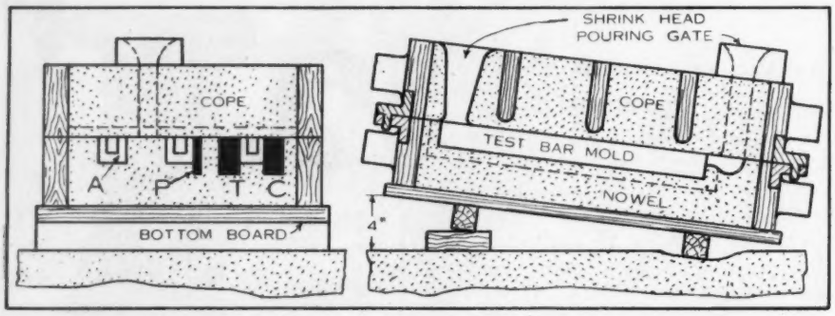


FIG. 1—SECTIONAL VIEW OF MOLD FOR MAKING SQUARE TEST BARS

Some of the square test bars were cast with a 2 x 2½-inch chiller on two sides, as illustrated at *TC* in the end view of Fig. 1. This was done to chill the bar to produce white iron. Others had a wrought plate, ¼ or ½ inch thick on one side of the bar only, as at *P*, to chill partly one side of the bar. Bars free from chill were surrounded with sand as shown at *A*. In some cases two totally chilled bars and one all gray bar were cast in the same flask.

The character of the chill, or grain of iron, is given in the accompanying tables under the heading, *Fracture*. An all-sand molded bar that showed a slightly mottled fracture instead of all-gray is termed *slightly mottled*. If the fracture was deeply mottled it is so indicated. In cases where the depth of a partly chilled bar was measured, the thickness of the chill is given in connection with the statement that one side was chilled.

To indicate that one of the vertically-cast sides, the cope surface, or the nowel face of a bar was in tension when tested, the words *nowel, cope* and *side* are placed on the line with the respective bar in the column headed *Tension*. This will be better understood by referring to Fig. 2, which illustrates the two methods of testing the bars.

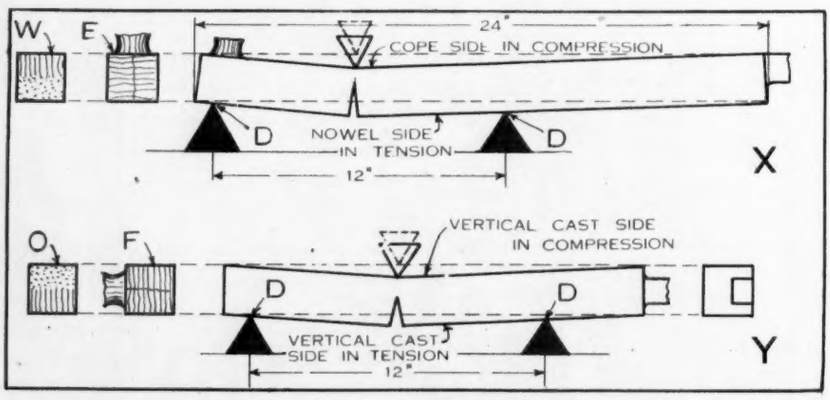


FIG. 2—END AND SIDE VIEWS OF A TEST BAR MADE IN MOLD, FIG. 1, AT *X*; *Y* SHOWS THE SECOND TEST ON A 2-INCH SQUARE BAR

[1]Presented at the Cleveland meeting of the American Society of Mechanical Engineers.

The width and depth as well as the diameter of all the tested bars are given in Tables III to X to permit checking the modulus of rupture column. The records of all tests are of solid bars and complete fractures.

Table I.

RANGE OF CHEMICAL CONSTITUENTS OF CHILLED CAR WHEELS

	Per cent.
Silicon	0.55 to 0.65
Sulphur	0.10 to 0.15
Manganese	0.55 to 0.70
Phosphorus	0.27 to 0.32
Combined carbon	0.60 to 0.70
Graphitic carbon	2.70 to 2.90

All transverse tests on both round and square bars, Tables V to IX, except tests 59 and 77, were made with a 12-inch span, and all drop tests in Table XII, with an 8-inch span; all others were tested for the transverse and drop tests on a 12-inch span, as shown in Fig. 2. Tests 59 and 77 were made with a 10-inch span. All drop tests in Tables V to IX were made with a 12-inch span.

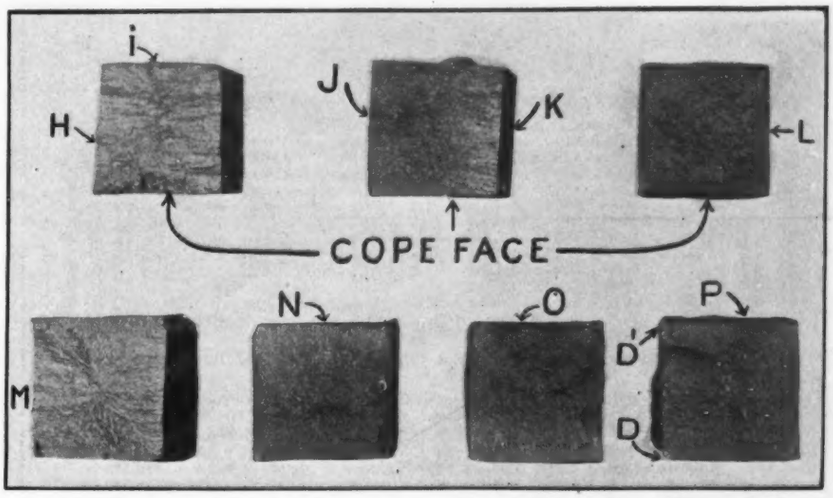


FIG. 4—TOP ROW: SET OF SQUARE BARS CAST FLAT; BOTTOM ROW: SET OF SQUARE BARS CAST ON END

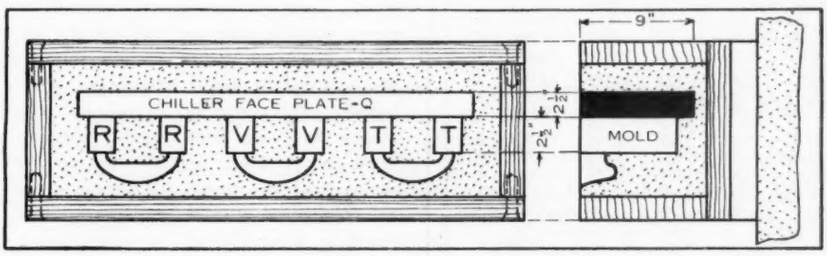


FIG. 3—OPEN SAND MOLD FOR MAKING COMPARATIVE CHILLING TESTS

The drop tests were made with a 25-pound weight having the first drop at a height of 6 inches and raised 6 inches higher for every blow until the bar was broken. If, for example, 6 is the number in the *drop* column of the tables, it means that the weight dropped once at each of the respective heights, 6, 12, 18, 24, 30 and 36 inches, before breaking the bar. The bars for the drop tests, Tables V to IX, were obtained by taking the long end of the 24-inch, square bars after they had been subjected to one transverse test. For this reason two kinds of tests with the same bar are given under the same test number.

A comparison of the drop tests with the transverse tests shows that where a bar is strong transversely it generally shows a relatively high strength under the drop test. This was also true in the case of nearly all of the round bars having a 6-inch span.

For castings subjected to shock or sudden impact, such as car wheels, rolls, shears, dies, etc., the drop test should grow in favor. The apparatus is not expensive and the time required is less than that consumed by any other method of testing.

No special, complete analysis is given of the respective sets other than that in Table I. This is due to the fact that car wheel mixtures used in one foundry vary but little. Table II gives the vanadium and titanium constituents of the test bars. Analyses of metal taken directly from the reservoir ladle before the ferro-manganese was added showed that this iron contained approximately 0.40 per cent manganese. The drillings for regular car wheel metal analyses are taken from blocks about 2 x 2½ x 8 inches, cast in sand so as to leave a gray body in the metal, which will agree closely with the gray iron between the plate and body, back of the chill of a car wheel.

Table III shows that bars, 1¾ inches square and 1⅝ inches round are too small for regular car wheel metal. This is indicated by the all-sand bars 3, 5, 8, 10 and 12, which showed fractures too strongly mottled instead of a fair gray structure. These sizes of bars are recommended only for chillable irons ranging from 0.90 to 1.20 per cent silicon.

The foregoing is a general statement, requiring modifications in some instances. A comparison of the strength of bars 4, 5, 11 and 12 with 9 and 10 indicates that strongly mottled iron of

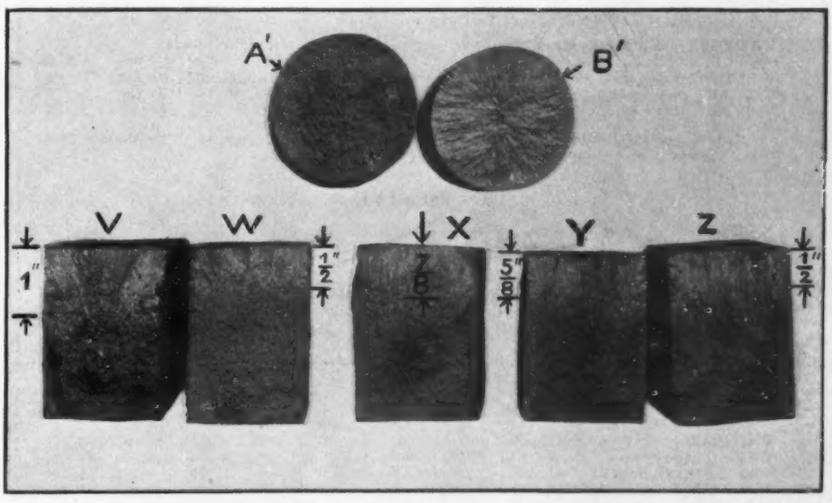


FIG. 5—TOP ROW: SET OF ROUND BARS CAST ON END; BOTTOM ROW: AFFECTS OF COOLING AND VARYING PERCENTAGES OF VANADIUM AND TITANIUM ON SQUARE TEST BARS

Table II.

ANALYSIS OF SETS ALLOYED WITH VANADIUM AND TITANIUM

Set No.	Ounces vanadium in 225 pounds of metal.	Ounces of titanium in 225 pounds of metal.	Per cent of vanadium in test bars.	Per cent of titanium in test bars.	Per cent of manganese in test bars.
9	10	..	0.06	....	0.63
11	..	10	....	0.02	0.72
13	22	..	0.12	....	0.64
15	..	22	....	0.07	0.60
18	5	10	0.04	0.03	0.69
19	8	15	0.05	0.05	0.68

Table III.

TRANSVERSE TESTS 1¾ INCHES SQUARE AND 1⅝-INCH ROUND BARS

Test No.	Fracture.	Width,	Depth, inches.	Tension inches.	Maximum load, pounds.	Deflection, inches.	Modulus of rupture	Set No.
1	All white	1.73	1.72	Nowel	5 140	0.016	18,070	1
2	All white	1.68	1.69	Side	13,160	0.028	49,380	1
3	Slightly mottled	1.75	1.76	Side	15,300	0.060	50,820	1
4	All white	1.59	diameter	....	4.780	0.023	36,280	1
5	Slightly mottled	1.60	diameter	....	7,340	0.065	54,670	1
6	All white	1.69	1.69	Nowel	7,580	0.028	28 260	2
7	All white	1.71	1.71	Side	15,280	0.042	55,010	2
8	Strongly mottled	1.72	1.79	Side	11,940	0.038	39,030	2
9	All white	1.60	diameter	....	5,820	0.032	43,350	2
10	Almost white	1.56	diameter	....	5,540	0.040	44,520	2
11	All white	1.59	diameter	....	3 080	0.021	23,370	3
12	Strongly mottled	1.58	diameter	....	7,760	0.073	60,030	3

Table IV.

TRANSVERSE TESTS OF VARIABLE DEPTHS OF CHILL WITH LOW CHILLING IRONS

Test No.	Fracture and per cent of chill.	Width, inches.	Depth, inches.	Load, pounds.	Deflection inches.	Modulus of rupture.	Set No.
13	Not chilled; clear gray iron.....	1.01	1.51	5,615	0.098	43 900	4
14	Chilled one side; 10 per cent white..	1.00	1.50	4,360	0.085	34,900	4
15	Chilled two sides; 25 per cent white	0.96	1.44	3,270	0.056	29,600	4
16	Not chilled; clear gray iron.....	0.98	1.46	5,175	0.105	44,500	5
17	Chilled one side; 15 per cent white.	1.03	1.48	4,220	0.069	33,700	5
18	Chilled two sides; 20 per cent white	1.02	1.45	4.390	0.079	36,900	5
19	Not chilled; clear gray iron.....	0.97	1.47	5,000	0.103	43,000	6
20	Chilled one side; 1 per cent white..	1.00	1.47	5,610	0.108	46 750	6
21	Chilled two sides; 100 per cent white	1.01	1.47	6,400	0.080	52,800	6
22	Not chilled; clear gray iron.....	1.00	1.46	4,350	0.157	36,700	7
23	Chilled one side; 5 per cent white.	0.99	1.43	4 550	0.159	40,500	7
24	Chilled one side; 20 per cent white.	1.06	1.50	4,200	0.137	31,700	7
25	Chilled two sides; 50 per cent white	1.02	1.50	2,300	0.110	18,050	7

Table V.

BARS 26 TO 30 CONTAINED 12 OUNCES MANGANESE; 31 TO 34, 12 OUNCES MANGANESE AND 10 OUNCES VANADIUM IN 225 POUNDS OF METAL

Test No.	Fracture and per cent of chill.	Width, inches.	Depth, inches.	Tension.	Load. pounds.	Deflection, inches.	Modulus of rupture	Drop	Set No.
R 26	Chilled both sides, all white iron	2.04	2.00	nowel	15,150	0.030	33,420	4	8
R 27	Chilled ½ inch one side..	2.10	2.05	nowel	14,330	0.036	29,230	6	8
R 28	All gray iron.....	2.12	2.08	nowel	23,860	0.070	46,820	9	8
R 29	All gray iron.....	2.31	diameter	....	25.750	0.095	63,710	.	8
R 30	Chilled; all white iron....	2.21	diameter	....	14,620	0.030	41,330	.	8
V 31	Chilled two sides; all white iron	2.08	1.97	nowel	16 130	0.030	35,900	4	9
V 32	Chilled ⅝ inch one side..	2.05	1.99	nowel	15,370	0.035	34,080	5	9
V 33	All gray iron.....	2.08	2.00	nowel	22,020	0.070	47,640	9	9
V 34	All gray iron.....	2.32	diameter	....	23,430	0.070	57,300	.	9

Set R poured with regular iron. Set V poured with vanadium in regular iron. Set T poured with titanium in regular iron.

Table VI.

BARS 33 TO 39 CONTAINED 12 OUNCES MANGANESE; BARS 40 TO 44, 12 OUNCES MANGANESE AND 10 OUNCES TITANIUM IN 225 POUNDS OF METAL

Test No.	Fracture and per cent of chill.	Width, inches.	Depth, inches.	Tension.	Load. pounds.	Deflection, inches.	Modulus of rupture	Drop	Set No.
R 35	Chilled both sides; all white	2.14	1.98	nowel	22,420	.....	48,108	.	10
R 36	Chilled ⅞ inch one side..	2.03	2.07	nowel	18,990	0.037	39,170	3	10
R 37	All gray iron.....	2.12	2.04	nowel	25,740	0.075	54,700	11	10
R 38	All gray iron.....	2.27	diameter	....	25 520	0.077	66,570	.	10
R 39	Chilled; all white iron...	2.22	diameter	....	13,440	0.024	37,477	.	10
T 40	Chilled both sides; all white	2.02	1.97	nowel	16,100	0.031	36,960	4	11
T 41	Chilled ¾ inch one side..	2.07	2.00	nowel	15,130	0.032	33,280	5	11
T 42	All gray iron.....	2.06	1.99	nowel	21,870	0.074	48,250	9	11
T 43	All gray iron.....	2.32	diameter	....	23,400	0.059	57,180	.	11
T 44	Chilled; all white iron.....	2.22	diameter	....	17,110	0.028	47,711	.	11

the same metal, also iron tending to all-white, as No. 10, will give exceptional strength. Many other round bars, 1⅝ inches in diameter were made, but were broken with a sledge to check the fractures. The two odd bars, 11 and 12, display greatly contrasting properties.

When a bar is of such a size that it is inclined to assume a mottled form, it is liable to go further and to become almost white; with the same iron, same temperature of metal and mold, there is as much chance to obtain a strength of 7,760 pounds as 5,540 pounds, as indicated by bars 10 and 12. But this sensitive condition must be avoided to make better comparisons between an all-chilled bar and an all-sand cast bar of the same size, form, and metal. To do this, it is necessary to have the sand cast bars sufficiently large to prevent their taking a mottled form, and still not so large as to prevent their being absolutely chilled to their centers, when cast in an all-iron mold or chiller. Many experiments may often be necessary to ascertain the best size to adopt for making a comparison between the white and gray of special chillable irons. Some of the 2¼-inch round bars were slightly mottled, although their silicon content was approximately 0.60 per cent. This could have been avoided largely by baking or drying the sand molds, as those used in the tests outlined were green sand. To increase the size of the round bar would reduce the tendency toward mottling. These could be made 2¾ and possibly 3 inches in diameter and still produce a perfect, all-chilled bar as a companion to an all-sand cast or gray bar having silicon around 0.60 per cent.

Erratic Effects of Chilled Crystals

It is important, therefore, to describe the structure of fractures when recording tests of chillable iron and when making comparisons with all-chilled and gray bars. It all shows that in some cases, it may be necessary to experiment in order to obtain the diameter best suited to ascertain the relative strength of the white and gray of chillable irons. This does not prevent the adoption of a standard for tests of chillable irons. All that is necessary is to state the structure of the fracture, diameter of the bar used, per cent of silicon, and possibly other constituents, if they vary to any extent from those given in Table I.

Table IV presents a few of the many tests made with chillable metal having about the following composition: Silicon, 2 per cent; sulphur, 0.06 per cent; phosphorus, 0.04 per cent and manganese, 0.30 per cent. In testing this set the load was applied in the deep direc-

tion of the bars, which were all cast on end. Tests Nos. 13 to 25 illustrate the erratic qualities of partly chilled bodies, caused by the interlacing of the white with the gray and the depth of mottled iron back of the chilled body.

In partly chilled sections, the temperature of the chiller to chill the iron, and of the metal to pour the mold, and the degree of dampness in the sand, have an effect both on the depth of chill, and on the structure of the metal for a considerable distance beyond the place where the white iron ceases. These are all factors difficult to control in regular practice, but the more that is known concerning them, the better will be the design of the castings. The variable hardness of mottled and gray bodies, interlacing with the white iron of chilled bodies, are displayed by the hardness tests, Table XI.

Tests of Bars Alloyed With Vanadium and Titanium

Tables V to IX present a series of tests comprising the following features:

Comparison of strength, deflection, chill and contraction, in all-chilled, partly-chilled, and gray bars of the same metal.

Comparison of square and round bars to emphasize the utility of the latter as a standard.

Comparisons of transverse and drop tests to show their conformity, and the practicability of the latter.

Comparisons of hardness created by the rate in cooling, giving chilled, mottled and gray fractures in the same metal.

Effects of ferro-manganese, vanadium, and titanium in the same metal and size of section, when of a chilled, mottled and gray structure.

It will be noted in Table XII that when the chilled face is in tension, as in tests Nos. 92, 94 and 96, the casting is much weaker than when the gray or mottled body is in tension, as in tests Nos. 91, 93 and 95 of set No. 22. The reliability of this set of tests will be appreciated when it is understood that the respective companion tests having the chilled side in compression and tension were made with the same bar, by the method shown in Fig. 2. After making two transverse tests of the same bar, there was sufficient remaining for a drop test having an 8-inch span. A few of these tests are indicated in Nos. 83 to 96. Bars 83 to 90 were cast on end, while bars 91 to 96 were cast flat, as shown in Fig. 1, and chilled on one side. The lower row, Fig. 5, shows a full set of the square bars cast on end, in which *M* is the all-chilled bar, *N* the

Table VII.

BARS 45 TO 49 CONTAINED 12 OUNCES MANGANESE; BARS 50 TO 54, 12 OUNCES MANGANESE AND 22 OUNCES VANADIUM IN 225 POUNDS OF METAL

Test No.	Fracture and per cent of chill.	Width, inches.	Depth, inches.	Tension.	Load, pounds.	Deflection, inches.	Modulus of rupture	Drop	Set No.
R 45	Chilled both sides; all white	1.90	2.02	nowel	16,460	0.030	38,220	5	12
R 46	Chilled 3/8 inch one side..	2.10	2.00	nowel	14,380	0.035	30,810	7	12
R 47	All gray iron.....	2.08	2.01	nowel	23,700	0.090	50,960	11	12
R 48	All gray iron.....	2.29	diameter	....	23,910	0.078	60,730	.	12
49	Chilled; all white iron....	2.22	diameter	....	15,610	0.022	43,520	.	12
V 50	Chilled both sides; all white	2.00	1.98	nowel	16,030	0.035	36,800	4	13
V 51	Chilled 7/16 inch one side..	2.10	2.02	nowel	14 090	0.033	29,600	3	13
V 52	Gray, slightly mottled....	2.05	2.00	nowel	24,800	0.065	54,440	7	13
V 53	Gray, slightly mottled ...	2.27	diameter	....	25,580	0.060	66,710	.	13
V 54	Chilled; all white iron....	2.20	diameter	....	17,890	0.025	51,250	.	13

Table VIII.

BARS 55 TO 59 CONTAINED 12 OUNCES MANGANESE; BARS 60 TO 64, 12 OUNCES MANGANESE AND 22 OUNCES TITANIUM IN 225 POUNDS OF METAL. BARS 65 TO 68 WERE FREE FROM MANGANESE AND OTHER ALLOYS

Test No.	Fracture and per cent of chill.	Width, inches.	Depth, inches.	Tension.	Load, pounds.	Deflection, inches.	Modulus of rupture	Drop	Set No.
R 55	Chilled both sides; all white	2.00	2.00	nowel	15,980	0.030	35,960	4	14
R 56	Chilled 3/8 inch one side; balance mottled	2.00	2.07	nowel	18,140	0.038	38,100	4	14
R 57	Gray iron; corners chilled.	2.02	2.00	nowel	22,720	0.070	50.610	7	14
R 58	Gray iron, slightly mottled	2.25	diameter	....	26,000	0.075	69,640	.	14
59	Chilled; all white.....	2.24	diameter	....	13,830	0.017	33,966	.	14
T 60	Chilled both sides; all white	2.00	1.98	nowel	13,200	0.025	30,300	4	15
T 61	Chilled 1/2 inch one side; balance mottled	2.04	2.03	nowel	16,840	0.035	36,060	4	15
T 62	Gray, corners slightly chilled	2.05	2.00	nowel	22,080	0.075	48,470	10	15
T 63	Gray iron	2.26	diameter	....	25.810	0.08	68,230	.	15
T 64	Chilled; all white iron....	2.22	....	....	16,070	0.05	44,810	.	15
S 65	Chilled both sides; all white	2.04	2.04	nowel	11,400	0.020	24,170	3	16
S 66	Chilled 5/8 inch one side; deeply mottled	2.06	2.04	nowel	10,860	0.030	22,800	3	16
S 67	Gray, corners mottled.....	2.04	2.00	nowel	17,870	0.050	39,420	5	16
S 68	Gray iron, mottled.....	2.25	diameter	....	24,180	0.065	64,204	.	16

Set S poured with spurious metal, containing no ferro-manganese.

Table IX.

BARS 69 TO 72 CONTAINED 12 OUNCES MANGANESE; BARS 73 TO 77, 10 OUNCES TITANIUM AND 5 OUNCES VANADIUM; BARS 78 TO 82, 12 OUNCES MANGANESE, 15 OUNCES TITANIUM AND 8 OUNCES VANADIUM IN 225 POUNDS OF METAL

Test No.	Fracture and per cent of chill.	Width, inches.	Depth, inches.	Tension.	Load pounds.	Deflection, inches.	Modulus of rupture	Drop	Set No.
R 69	Chilled both sides; all white	1.98	2.02	nowel	18,480	0.035	41,170	5	17
R 70	Chilled 1/4 inch one side; balance mottled	2.04	2.50	nowel	16,760	0.055	23,660	6	17
R 71	All gray iron.....	2.05	2.05	nowel	24,390	0.085	51,020	11	17
R 72	All gray iron.....	2.27	diameter	....	24,030	0.065	62,660	.	17
TV 73	Chilled both sides; all white	2.02	2.00	nowel	12,330	0.025	27,470	.	18
TV 74	Chilled 1/8 inch one side; balance mottled	2.05	2.07	nowel	18 340	0.040	37,580	6	18
TV 75	All gray iron	2.10	2.04	nowel	24 980	0.065	51,390	11	18
TV 76	All gray iron	2.29	diameter	....	22,070	0.060	56,060	.	18
TV 77	Chilled; all white iron..	2.21	diameter	....	16,370	0.029	38,560	.	18
TV 78	Chilled both sides; all white	1.96	2.03	nowel	16,250	0.030	36,210	4	19
TV 79	Chilled 1/4 inch one side; balance mottled	2.00	2.04	nowel	14,580	0.040	31,530	5	19
TV 80	All gray iron	2.04	2.00	nowel	22 240	0.065	49,060	8	19
TV 81	All gray iron	2.29	diameter	....	23,470	0.060	59,620	.	19
TV 82	Chilled; all white iron..	2.20	diameter	....	18 700	0.030	53,570	.	19

Set S poured with spurious metal, containing no ferro-manganese.

Table X.

CONTRACTION, IN INCHES, OF ROUND BARS CAST ON END AND SQUARE BARS CAST FLAT

Set No.	Round bars, all chilled.	Round bars, all gray.	Square bars, all chilled.	Square bars, part chilled.	Square bars, all gray.
R 12	0.22	0.12	0.47	0.28	0.26
V 13	0.23	0.13	0.48	0.30	0.27
R 14	0.22	0.12	0.47	0.28	0.26
T 15	0.21	0.11	0.43	0.29	0.25
S 16	....	....	0.50	0.36	0.32
R 17	....	....	0.48	0.31	0.28
TV 18	0.22	0.12	0.47	0.29	0.26
TV 19	0.23	0.12	0.48	0.30	0.27

Table XI.

BRINELL AND SCLEROSCOPE HARDNESS TESTS OF SPECIMENS, FIG. 4

		—H—		—I—		—J—		—K—		—L—	
Set No.	Class.	Bri.	Scl.	Bri.	Scl.	Bri.	Scl.	Bri.	Scl.	Bri.	Scl.
12	R	394	65	348	59	179	39	326	55	185	39
13	V	377	63	358	60	227	41	403	60	199	41
14	R	417	66	403	58	185	38	386	61	175	38
15	T	419	68	427	56	211	41	412	58	186	40
16	S	452	69	412	59	224	40	443	60	191	42
17	R	358	62	390	56	189	39	317	47	173	37
18	TV	382	64	375	61	193	40	400	54	183	40
19	TV	442	66	422	54	189	41	417	57	179	38

chilled side, and *O* the gray side of the partly chilled bars, while *P* is the all-sand cast bar. The position of the chilled face when testing is shown at *W* for both the end cast and flat cast bars when upward, and at *O* when downward, at the left of Fig. 2.

Another feature is the great difference between the strength of chilled iron when the lines of crystallization are vertical to the load, and when they are horizontal to it. In Table III, tests Nos. 1, 2, 6 and 7 show a difference of about 61 per cent for the first two bars, and about 51 per cent for the second two. The lines of crystallization are shown in Fig. 2, *E* being the weakest and *F* the strongest position of the bar.

To obtain more favorable conditions for rapidly pouring the alloyed metal than was offered by the mold, Fig. 1, cupola chill blocks were used as shown in Fig. 3. The pair of chilled blocks, *R*, were poured with regular car wheel metal, cooled down to nearly the same temperature as that for pouring the chill block molds *V* and *T* having the vanadium and titanium alloys in their respective ladles. This method demonstrated that the vanadium increased the depth of chill, or held the carbon more in its combined form, while the titanium operated in the opposite direction. Numerous tests were made following this plan, some of which had a ½-inch chiller face plate in place of the 2½-inch plate *Q*, and all of them were effective in the same direction as to their respective results.

One test with the three sets of molds, Fig. 3, gave a difference in the thickness of chill as seen at *X*, *Y* and *Z*, Fig. 5. Set *R* was poured with the regular iron; set *V* with the vanadium and set *T* with the titanium alloyed metal, there being 1 pound of each alloy in about 175 pounds of metal.

Further experiments with 2 pounds of titanium in 175 pounds of metal gave a thickness of chill, shown at *V* and *W*, Fig. 5, of 1 and ½ inch respectively. Believing that by increasing the amount of titanium the chill might be wholly prevented, 4 pounds were put into the metal for two tests. This did not act as effectively as the 2-pound addition and showed that iron could not be prevented from chilling beyond a certain limit by its use.

Table XII.

TRANSVERSE AND DROP TESTS OF ONE SIDE CHILLED BARS ALTERNATED TO BE IN COMPRESSION AND TENSION

Test No.	Fracture and per cent of chill.	Width, inches.	Depth, inches.	Load, pounds.	Deflection, inches.	Modulus of rupture.	Drop	Set No.
83	Gray iron, slightly mottled....	2.39	2.06	21,070	0.045	42,760	7	20
84	Chilled four sides; all white...	2.12	2.18	23,380	0.040	41,770	15	20
85	Chilled 5/8 inch one side; balance mottled; gray side in tension	2.06	2.05	21,590	0.030	43,435	9	20
86	Chilled 5/8 inch one side; balance mottled; chilled side in tension	2.07	2.03	20.430	0.035	43,111	7	20
87	Gray iron, slightly mottled....	2.11	2.07	19,420	0.045	38 664	8	21
88	Chilled four sides; all white..	2.06	2.20	22,450	0.020	40,532	15	21
89	Chilled 1/2 inch one side; balance mottled; gray side in tension	2.10	2.04	19 880	0.050	40,947	8	21
90	Chilled 1/2 inch one side; balance mottled; chilled side in tension	2.06	2.06	13,660	0.030	28,132	6	21
91	Chilled 1/4 inch one side; 3/4 inch mottled; gray side in tension	2.11	2.15	23,760	0.070	43,861	14	22
92	Chilled 1/4 inch one side; 3/4 inch mottled; chilled side in tension	2.13	2.06	17,260	0.035	34,373	.	22
93	Chilled 1/4 inch one side; 3/4 inch mottled; gray side in tension	2.12	2.10	21,760	0.055	41,914	7	22
94	Chilled 1/4 inch one side; 3/4 inch mottled; chilled side in tension	2.13	2.06	13.190	0.025	26 378	.	22
95	Chilled 1/2 inch one side; 1 inch mottled; gray side in tension	2.11	2.03	20,350	0.055	42,127	5	22
96	Chilled 1/2 inch one side; 1 inch mottled; chilled side in tension	2.13	2.13	15,720	0.030	29,281	.	22

Effects of Vanadium and Titanium on Contraction

Tests to otain contraction were made with both round and square bars and are given in Table X. The 2¼-inch round bars show the contraction for a length of 12 inches and the square bars for 22 inches. The ratios for contraction of the bars cast on end agree closely with those of the bars cast flat. The regular irons are fairly uniform in their contraction. The vanadium bars show a greater contraction than those containing titanium, the latter having the least of any of the metals. The spurious metal of set No. 16, containing no ferro-manganese, shows the greatest contraction. The most radical difference exists between the all-chilled and all gray bars.

In making deductions of the relative strengths of the alloy mixtures, the round bars were selected chiefly on account of their uniform structure and greater uniformity of results. The gray round bar *A'*, Fig. 5, shows a much better uniformity of grain structure than exists in the square bars, *L* and *P*, Fig. 4. The latter contain irregular patches of grains embodying every structure from white at the corners *D'*, interlaced with mottled, leading to a gray center, sensitive to change with the least variation in the dampness or character of the sand, hardness in ramming and temperature of pouring metal. This irregularity of structure is apparent likewise in the all-white square bars *H* and *M*, Fig. 4, when compared with that shown at *B'*, Fig. 5.

The titanium bars showed an increase in strength over the regular bars, of 27 per cent in the white iron with bars 39 and 44, Table VI, and 32 per cent in the white iron with bars 59 and 64, Table VIII.

The vanadium showed an increase of strength of 9 per cent in the gray iron, with bars 48 and 53, and 17 per cent in the white with bars 49 and 54, Table VII.

The spurious bars which had no ferro-manganese or other alloys in them, showed a decrease in strength of 7 per cent in the gray iron, with bars 63 and 68, Table VIII. No comparison of the white iron in the round bars can be given, since there are no chilled round bars for this last set; but the contrast is so great in the square chilled bars 55 and 65, which show the white of the spurious metal, that it is safe to consider them 30 per cent weaker than the regular iron.

Comparison of Partly With Wholly-Chilled Bars

In conducting this series of tests, bars were cast having only one side chilled as companion bars to the all-chilled and gray bars, as shown in the second test, Tables V to IX. It will be a surprise to many to find that in all the tests, except the two of set 14, the partly chilled bars are weaker than the all-chilled or white bars. A view of these three companion bars is shown in Fig. 4, *K* being the partly chilled side.

The weakness of the partly chilled bars is due to internal strains and scattered amalgamation of the state of the broken carbon of the metals. Bars showing nearly every effect of rapid and slow cooling, and not possessing the homogeneous blending of one char-

acter of grains, are illustrated by *H, L*, Fig. 4.

All the partly chilled bars showed the chilled body interlacing the mottled, the latter blending into the gray. This is generally considered to be a stronger section than one in which a distinct line marks the separation of the white and gray, and causes conditions such as can still further increase the weakness of partly chilled castings.

A feature of these tests worthy of consideration is the strength and deflection obtainable in strictly all-chilled or white iron. It is generally supposed that white iron is very much weaker than gray, and has very little if any deflection. By referring to tests Nos. 7, 21, 30, 35, 44, 49, 54, 69, 82, 84 and 88, it will be noted that white iron can be obtained at least 75 per cent as strong as gray. White iron is the strongest with the crystals radiating from a center as at *M* and *B'*, Figs. 4 and 5. The round bar excels the square in this form of structure.

Spalling Weakness of Chilled Iron

The chief evil of white iron is its erratic strength and its easily spalling property. Numerous experiments were conducted to test the spalling weakness of white and gray iron and it was found that white bodies do not possess much over one-third the strength to resist spalling blows that exists in the gray or mottled of the same iron.

Table XI contains Brinell and scleroscope tests of three samples taken from each of the first three bars of sets 12 to 19. The Brinell depressions were produced by a ⅜-inch ball loaded with 6,000 pounds. Both the Brinell and scleroscope records are the averages of four to six tests on a sample. The columns *H, I, J, K* and *L* give the tests of the surfaces indicated by the same letters shown in Fig. 4. Those familiar with these tests know that there is some variation of hardness over the area although it may not exceed 1 square inch. The surface *H* had a variation of 3 to 7 points and *I*, 8 to 15 points; *J* about 6 points, while *L* had only 3 points, showing that a greater uniformity in hardness can be expected in all gray bodies than in mottled or chilled surfaces.

Table XI also shows that directly-chilled faces, as *H*, are harder than those crystallizing over a sand surface caused by the heat-absorbing effect of a chiller, some distance from such points, as *I*. The excessive variation of the surface *I* is believed to be caused by the curved structure of the heat radiation lines, as they come to the surface at an angle, differing from the straight lines shown on the sides at *H*.

The spurious iron is on an average harder than the regular iron. The alloys appear to have a hardening effect as compared with the regular iron, or that having only ferro-manganese in it. The irregularity in the effect of the alloy is no doubt due to the variations in the temperature of the metal filling the molds, and brings about variations in hardness similar to creating an irregularity in the chill, strength, deflection and contraction of like irons.

CIRCULARS SENT OUT

By Chairman Hoadley, of Alabama Consolidated Coal & Iron Co.

Circular letters have been sent from the New York office of the Alabama Consolidated Coal & Iron Co., by Joseph H. Hoadley, chairman of the board of directors, to stockholders calling their attention to letters sent to the Baltimore Trust Co. recently, and to former directors of the Alabama company, in which he demanded that they make "restitution to the treasury of the Iron & Coal Co. of the sum of $1,718,750, or thereabouts;" also to the fact that the federal district court issued a restraining order, thus preventing the Baltimore Trust Co. from disposing of $1,250,000 improvement and refunding bonds pledged as collateral for notes aggregating $330,000.

Joshua Levering has resigned from the directorate of the Alabama company, following similar action by William C. Seddon several weeks ago. Mr. Levering is one of the largest holders of the company's preferred stock, and was one of its founders. He is chairman of the enlarged preferred stockholders' protective committee.

The *Baltimore News*, commenting on the Alabama company's position, says:

"There is no question that the affairs of the Alabama company are badly mixed. Somebody is still bidding for Alabama common stock (free shares), and today the price was run up to 40 bid. So far as is known every share has been deposited under the agreement to merge the Alabama property with the Southern Iron & Steel Co., and it would seem safe to bid almost any price for the stock, for there is no free stock, according to statements made in the financial district today. It is surmised there is some hidden motive in bidding for the stock."

TO AID PLATT CO.

Syndicate Will Purchase Bonds—Reorganization Agreed Upon.

The report of the reorganization committee on the Platt Iron Works, Dayton, O., of which the Central Trust Co., New York, is the depository, has been issued.

A new company will be created, and it is designed to give it a working capital of approximately $300,000. The new company, it is proposed, will authorize $1,000,000 in first mortgage 6 per cent 20-year gold bonds, of which $300,000 will be reserved to be issued for 75 per cent of the cost of future additions, etc., $1,100,000 preferred stock and $1,000,000 common. A syndicate has been formed which has agreed to purchase $300,000 of new first mortgage bonds and $150,000 of new preferred stock for $300,000, together with accrued interest on the bonds to the time of payment. A cash compensation is to be paid to the syndicate for its undertaking. Bondholders and other creditors depositing under the plan and agreement of reorganization will receive, on completion of reorganization and after the amount of claims shall have been finally fixed and allowed in bankruptcy proceedings or determined or admitted by the managers, new first mortgage bonds and voting trust certificates representing new preferred and common stock, as follows:

For each $1,000 bond with coupon due Sept. 1, 1912, and also subsequent coupons attached, new first mortgage bonds, $500; new preferred stock, $350; new common stock, $300. For each $1,000 of other indebtedness new preferred stock, $350; new common stock, $500. Holders of bonds and other creditors must deposit their bonds and claims with the Central Trust Co. and receive certificates of deposit there.

The bonds must be deposited on or before June 15, after which date no deposits will be received, except at the discretion of the managers.

Attorney Poor, representing the Central Trust Co., New York, explained to creditors of the Platt Iron Co., at a meeting in Dayton, O., details of the proposed reorganization whereby the plant will be retained in Dayton, and asked for an extension of time in which to dispose of certain formalities. Referee in Bankruptcy McConnaughey granted an extension until June 25.

The annual meeting of the American Car & Foundry Co. will be held June 27.

THE IRON TRADE REVIEW

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Physical and Commercial Pig Iron Capacity

With the steel works blast furnaces of the United States working at record rate and the merchant furnaces at less than two-thirds their capacity, a position is presented which prompts fresh study of the actual pig iron making capacity of the country. From time to time, the question of the physical capacity of the furnaces has been discussed in these columns, using as a basis the fact that from July 1, 1906, to July 1, 1907, the country ran at full capacity and made 26,200,000 tons of pig iron. The capacity at later dates, when actual production furnished no indication of the capacity, has been estimated by making allowance for the new furnaces completed. No attempt has been made until recently to estimate the changes which have occurred in total capacity through the abandonment of some furnaces, on the one hand, and the enlarging of many furnaces on the other hand. For a time, it was sufficient to assume that these influences balanced each other, because relatively little had occurred in either direction, but it is evident that in five years there has been a great deal of expansion in blast furnace capacity, outside of that which has occurred through the building of strictly new furnaces.

A very careful summary of the blast furnace capacity of the United States has lately been made, eliminating all furnaces which have been abandoned, but taking fresh ratings for furnaces which have been enlarged, rebuilt or otherwise improved in the past few years. This summary, with allowance for time lost in relining, and other physical contingencies, indicates that the blast furnace capacity of the country today, from a physical standpoint, is about 40,000,000 tons a year.

The physical capacity of the blast furnaces, however, is not the actual capacity of the industry. Two things are requisite to the operation of a blast furnace: (1) An adequate supply of raw materials; (2) a market for the product. At a given price for the pig iron product, the blast furnaces can afford to pay only certain prices for coke and ore. Given considerably higher prices for pig iron, much higher than the prices now prevailing, furnace owners, theoretically, would begin to bid up coke and ore until they obtained a sufficient supply.

The question then arises, if our physical capacity is 40,000,000 tons of pig iron, could the requisite raw materials be obtained? As to ore supply, it may be observed, using round figures, that the maximum production of the Lake Superior region in a year has been about 43½ million tons, the maximum outside production about 10 million tons, and the maximum imports about two and one-half million tons, making a maximum supply of 56,000,000 tons. Our greatest production in a calendar year, however, has only been 27,300,000 tons. It is plain that to make 40,000,000 tons instead of 27,300,000 tons of pig iron, a very great increase in the supply of ore would be necessary. Imports could not be increased above 2,500,000 tons, for the supplies are more limited than when such imports occurred. The production outside the Lake Superior region could be increased by only a very few million tons, and the Lake Superior region's production itself could not very greatly increase. Evidently the ore supply would fall down before the 40,000,000 tons of pig iron could be made.

Before the ore supply broke down, however, the coke supply would fail. We have the condition that with a rate of pig iron production of less than 30,000,000 tons a year the resources of the Connellsville region have been taxed to supply the tributary blast furnaces, and little, if any, increase can be looked for in that direction, so that our actual production of pig iron is limited first by the coke supply, next by the ore supply, and last of all by the actual physical capacity of the blast furnaces. The last named is usually considered first. Really it is the third limitation, and of no immediate importance at this time.

American Exports Approach British

Iron and steel exports from the United Kingdom in April amounted to 300,816 gross tons, while exports from the United States, as shown by the comprehensive report in our last issue, amounted to 267,312 gross tons. This is by far the nearest approach which has ever occurred. American exports, while growing, have never been in the same class as those of England or Germany. Prior to 1911, American exports for a year have never been one third of British exports, and the same statement can be made as to Germany, except as to years prior to 1908. British exports have always been large, but German exports have been large only recently. In 1901, German exports were half as large as those of the United Kingdom, having previously been relatively insignificant. The sudden increase was due to the establishment of the German syndicates, with their export bounty system, and under that system it came about that while prior to 1901 German exports were small, and in that year were only half those of the United Kingdom, in 1910 they actually passed those of the older exporting country, though by only a small margin, British exports in 1910 being 4,735,734 gross tons and German exports 4,868,522 metric tons. In the next year, British exports were 4,664,772 tons and German exports 5,377,287 tons.

American exports have hitherto been relatively insignificant. Our exports, while important in their way, amounted to nothing compared with the movement from each of two competing countries of 4,000,000 or 5,000,000 tons a year. In 1900, American ex-

ports just exceeded a million tons, but the material was largely pig iron, billets, sheet bars and rails. Afterwards the tonnage decreased to a third of a million tons in 1903, at which time began the work of the United States Steel Corporation in building up an export trade in the finished steel products, such as bars, plates, structural material, pipes and fittings, etc., no finished products having previously been exported in any quantity, outside of rails and wire. While the tonnage increased, it increased so slowly as to leave the United States far behind England and Germany. In 1904-5-6-7, our exports exceeded a million tons, but did not reach one and a half million, and in 1908 they fell below the million-ton mark. Since then the record of the three countries has been as follows:

	United States.	Germany.	United Kingdom.
1909	1,243,467	4,043,730	4,380,665
1910	1,535,698	4,868,522	4,735,734
1911	2,187,809	5,377,287	4,664,772

Thus in 1909, American exports were less than one third those of either England or Germany, and in 1910 and 1911 they fell far short of reaching one half of the tonnage of either country. German export statistics for this year are not available, but American and British exports have been as follows:

	United States.	United Kingdom.
January	151,208	449,903
February	204,972	347,854
March	218,690	516,764
April	267,312	300,816

A sweeping change thus occurred from March to April. In the earlier month, American exports were 42 per cent of the British, but in April they were 89 per cent of the British. Our satisfaction at the showing must, of course, be tempered by the reflection that British exports in April were doubtless reduced somewhat by the coal strike, but it must be remembered that the strike began March 1 and terminated before April closed. Our April exports were very large, in any event, being the largest on record for a month by the comfortable margin of 17 per cent, the previous record month having been April, 1911, with 228,501 tons. Exports in April of this year were at the rate of 3,300,000 tons. For a month, at any rate, we have been in the 3,000,000-ton class, and a few more gains will advance us to the next class. It is lack of transportation and commercial facilities that holds our exports down, rather than high price f. o. b. mill, for it is well known that a number of steel products in the past few months have sold, for the domestic market, at lower prices at mill than regular foreign prices at mill, and that despite the handicap of our high wages.

Giving All a Chance

We publish below a letter from C. F. Wheaton, of the Dodge Mfg. Co., Ltd., Toronto, making a novel and interesting suggestion in regard to what he believes to be a practical method for the co-operation of manufacturers, so that business can be conducted on a fairly profitable basis without violating the law. As Mr. Wheaton suggests, this is a very difficult problem to solve. It is worthy of the very best thought that business men can give it and we shall be glad to receive communications commenting upon the plan which Mr. Wheaton proposes.

EDITOR THE IRON TRADE REVIEW:—

For a number of years, the writer has been reading your reports of the addresses of Judge Gary both at the Round Table meetings and at various other gatherings, and needless to say, has enjoyed very much many of the sound doctrines preached by that very able gentleman; but there was one of his recent sayings which seemed to the writer to contain more significance than usual, and which so far, strange to say, seems to have brought out little controversy. Roughly, the statement was this, that while the judge considered the action of the United States government quite proper in prosecuting their investigation at least so far as some of the corporations were concerned, and under possibly an out-of-date law or act, that undoubtedly sooner or later either the government or the industries would find a way whereby they would be entitled to carry on their businesses on the basis of *a known net profit legally*, and it is with respect to this prophecy that I am taking the liberty of addressing you. For instance, our banks and insurance companies and even governments are permitted to do business at a profit, and why there may not be some fixed laws or systems whereby manufacturers may be assured of a given profit seems strange. It has occurred to the writer that the judge must have had something in mind when he referred to this question in the way he did, and the thought has suggested itself to the writer that if the various trades and industries were to form themselves into associations and sections of associations and commence by attempting to establish standardized methods of both bookkeeping and cost keeping, then after that, all that a section of an association might require to agree upon would be the percentage of net profit to be levied or exacted. That is to say, if a standard form of cost keeping existed whereby the selling price was to be

Actual cost of material, plus

Cost of productive labor, plus a percentage of advance upon the productive labor sufficient to cover non-productive labor, all fixed and general expenses, not including sales expense, and plus a percentage on the net selling price sufficient to absorb sales expense, and plus a percentage on the total equivalent to insure a net profit of 10 per cent or whatever per cent had been determined upon. In this way, a fixed system or form is devised and only a fixed net profit is provided for, but no attempt is made to make uniform prices and any competition which there is will not be in the way of price-cutting, but must be in the direction of reduction of cost of production. Such a plan would undoubtedly show some of the little fellows what they had to do in order to stand up and it would undoubtedly give the big fellow, who had the greater facilities and more perfected organization, the best show, but has he not really got that anyway? And, if a change must be made, and if associations are to be prohibited from fixing uniform selling prices on all commodities, must not the only alternative be something along the lines herein suggested?

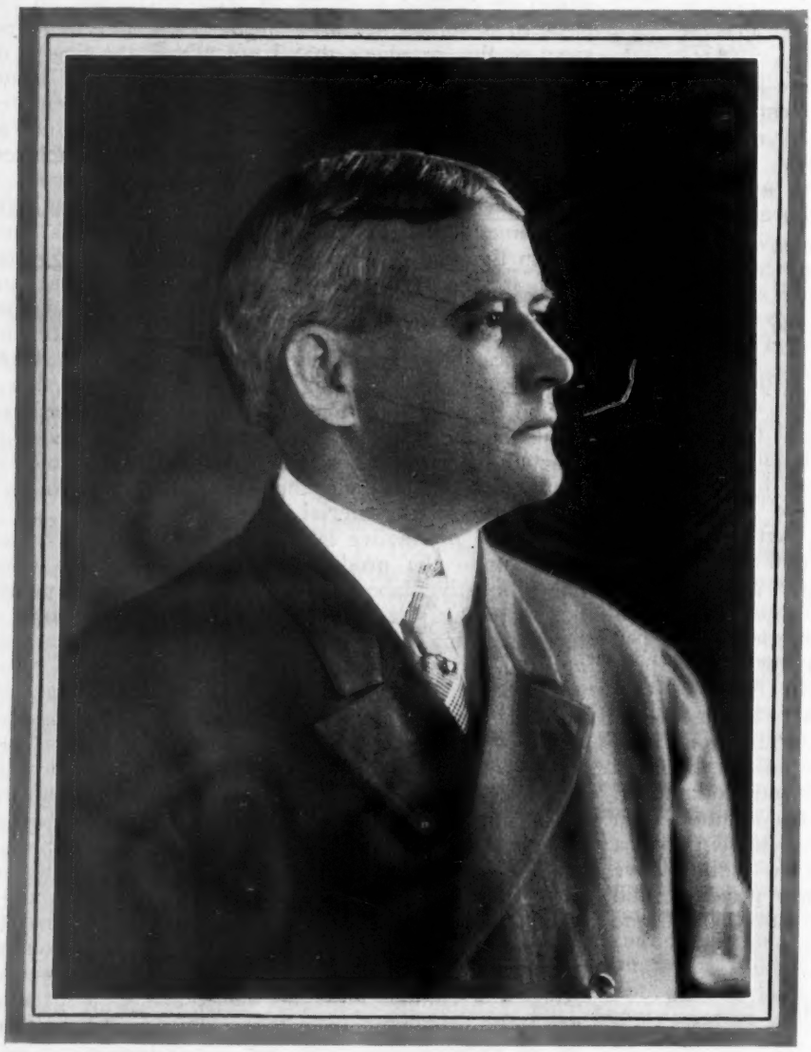
Of course, this is a very large and far reaching problem and the writer is not intending to solve it, but simply to raise the question, did not the judge's remarks throw out the suggestion that it was up to somebody to get busy and devise a plan for the protection of the manufacturing industries in a *known profit legally*, and if I am right in my surmise, would it be in order for a journal such as yours to court controversy on the subject?

C. F. WHEATON.

Toronto, Canada, June 3.

MEN OF THE IRON TRADE

Harry Morse Estabrook, recently elected president of the Barney & Smith Car Co., Dayton, O., was born in Cambridge City, Ind., Dec. 25, 1864. While in his infancy his parents removed to Terre Haute, Ind., where he received his education in the public schools of that city, graduating from the Terre Haute high school with the class of 1883. He then went to Oswego, N. Y., to study stenography, and at the close of his course, took a position as stenographer in the motive power department of the New York, West Shore & Buffalo railway, under R. H. Soule, superintendent of motive power, and James M. Boone, master mechanic, at Frankfort, N. Y., where he remained until August, 1885, when he moved to Dayton, O., to accept a position as stenographer with the Barney & Smith Car Co. After filling various positions as stenographer and general assistant to the superintendent, Mr. Estabrook was appointed assistant superintendent, Dec. 9, 1897. On Jan. 2, 1900, he was elected superintendent. On June 5, 1906, he was elected as a member of the board of directors and was also elected to the office of second vice president and general superintendent. On Nov. 10, 1908, he was elected to the office of vice president and general superintendent. At the annual meeting, held June 4, 1912, he was elected president of the company, to succeed A. M. Kittredge, who resigned, April 17, 1912. Other officers elected were: A. J. Stevens, vice president and general manager, to succeed Mr. Estabrook; J. F. Kiefaber, second vice president; E. A. Oblinger, secretary and treasurer, and E. H. Sines, assistant secretary. Jos. Rawson, Walter St. John Jones and John L. Lincoln, of Cincinnati; Eugene J. Barney, E. F. Platt, H. N. Estabrook, A. J. Stevens and J. F. Kiefaber, of Dayton, were elected to the directorate.



PRESIDENT H. M. ESTABROOK

Of Barney & Smith Car Co., Dayton, O. He Was Formerly Vice President and General Superintendent, and Was Chosen Recently to Succeed President A. M. Kittredge

John C. Dean, secretary and treasurer of the Dean Bros. Steam Pump Works, Indianapolis, is in Europe. He expects to return in September.

Henry G. Dresses, president of the Dresses Machine Tool Co., Cincinnati, O., has left for Europe and will visit European manufacturing cities in the interests of his company.

George H. Pickop, formerly master mechanic of the American Hardware Co., has accepted a position as general superintendent of the Universal Screw Machine Co., Hartford, Conn.

C. A. Perkins has been appointed district manager in charge of a recently opened office of the Pittsburgh Testing Laboratory, Pittsburgh, at 204 White building, Seattle.

M. J. Ruse, formerly assistant manager of the Whitaker-Glessner Co.'s plant at Martins Ferry, O., has resigned his position and is now removing with his family to Pittsburgh.

Mano Zan, manager of the Meese & Gottfried Co., machinery merchants, at Portland, Ore., has been appointed general sales manager of the company, with offices at San Francisco.

E. L. McNair is in charge of a party of engineers in the Cuyuna range, Minnesota, making a survey for the government geologists, who will shortly begin work in that section.

Fred A. Geier, president of the Cincinnati Milling Machine Co., Cincinnati, O., was elected president of the Commercial Association of that city at the annual meeting a short time ago.

Walter E. Scott, chief clerk of the order department of the Youngs-

MEN OF THE IRON TRADE

town Sheet & Tube Co., Youngstown, O., has resigned to accept a position with the Continental Supply Co., at St. Louis.

E. E. Kline has been named superintendent of the Berger Mfg. Co.'s steel plant at Canton, O.

Samuel M. Curvin, president of the J. G. Brill Co., Philadelphia, has been elected a director of the Central National Bank, of that city.

Leroy Kramer, formerly assistant to the second vice president of the Chicago, Rock Island & Pacific railway, has been appointed assistant to John S. Runnels, president of the Pullman Co.

Jacob B. Fricker, of the Crescent Brass Foundry Co., Reading, Pa., has been selected presidential elector representing the Berks-Lehigh congressional district. His name was placed on the ticket at the Republican state convention.

William C. Redfield, vice president of the American Blower Co., Detroit, and United States congressman from the Fifth New York district, has announced himself a candidate for the vice presidency, on the Democratic national ticket.

S. S. Shambaugh, assistant treasurer of the Kokomo Steel & Wire Co., Kokomo, Ind., was one of the speakers at a recent meeting of the Indianapolis Transportation Club, Indianapolis. He is first vice president of the organization.

R. S. Bryant, formerly with the Bryant Rim Co., Columbus, O., has been appointed consulting engineer for the Standard Welding Co., Cleveland. Mr. Bryant has had considerable experience in the design and manufacture of automobile rims.

A. H. Vollner, identified with the Cincinnati office of the Domhoff & Joyce Co., pig iron and coke dealer, has been appointed manager of the company's offce at Cleveland. He succeeds R. H. Jenkins, recently transferred to the Chicago office.

William Henry Jennings has resigned his position with the American Steel & Wire Co., to become general sales manager of the tire department of the Diamond Rubber Co., Akron, O. Mr. Jennings was with the American company 18 years.

Wesley Donald, who has been assistant to I. A. Brown, superintendent of labor and transportation at the Ohio works of the Carnegie Steel Co., Youngstown, O., has been named superintendent of that department of the Brier Hill Steel Co., Youngstown.

R. M. Dalzell, Albert and Harry Whitaker, Andrew Sweeney, Andrew Glass, Dwight Wagner and Frank Bycott, comprising the directorate of the Portsmouth Steel Co., recently went from Wheeling, W. Va., to Portsmouth, O., to inspect the company works.

James T. McCleary, secretary of the American Iron and Steel Institute, is a member of the Christopher Columbus Memorial Commission, under the auspices of which the monument to Columbus was unveiled Saturday, June 8, at the union station plaza at Washington.

George E. Day, general manager of sales of the Youngstown Sheet & Tube Co., at Youngstown, O., and F. E. Merrick, president of the Colonial Supply Co., a subsidiary of the Youngstown Sheet & Tube Co., with headquarters at St. Louis, Mo., have started on a trip to Europe.

Wm. B. Franklin, who has been western sales manager of the United States Cast Iron Pipe & Foundry Co., with headquarters in Chicago, has been made general manager of sales, effective June 15, and will establish his offices in the Morris building, Philadelphia, after that date.

J. P. Thompson has been appointed general superintendent of the Van Norman Machine Tool Co., Springfield, Mass. Mr. Thompson until recently was general superintendent of the Cameron Steam Pump Co., New York, and formerly held a similar position with the Pond Co., Plainfield, Mass.

S. W. Miller is superintendent of the recently established Harriman, Tenn., offices of the Tennessee Timber, Coal & Iron Co., 22 William street, New York. The company is preparing to develop its 25,000 acres of mineral and timber land on a branch of the Queen & Crescent railway, surrounding Nemo, Tenn.

George T. Smith, William Murray, Edward L. Young, William H. Corbin, George E. Long, William G. Bumsted and Harry Daily were unanimously re-elected to the directorate of the Joseph Dixon Crucible Co., at the annual meeting of the stockholders held recently in the main office of the company at Jersey City, N. J.

W. P. Dinsmoor, for a number of years manager of the Sullivan Machinery Co., at Denver, has been appointed manager of the Chicago sales office. George W. Blackington, connected with the general offices of the Sullivan company, at Chicago, as general sales manager, will succeed Mr. Dinsmoor in charge of the Denver office.

George B. Norcross is in charge of the new office of the Rockwell Furnace Co., New York, in the Engineers' building, Cleveland. Associated with Mr. Norcross are Walter F. Johnson, formerly assistant treasurer of the King Bridge Co., Cleveland, and E. W. Saunders, formerly with the Carbon Steel Co., at Pittsburgh.

W. Robinson has severed his connection with the Frontier Iron Works, Buffalo, and has organized the W. Robertson Machine & Foundry Co., 32 Greenwood place, Buffalo. Mr. Robinson is president and manager of the new company; T. J. Reed, vice president; F. H. Keil, secretary, and F. M. Robertson, treasurer.

Jacob Langeloth and Berthold Hochschild, who have been connected with the American Metal Co., New York, the last 25 years, received special honors, June 1, when the company celebrated its twenty-fifth anniversary by a series of festivities. Senior members of the staff received gold badges of a design following the seal of the company.

William E. Kelly was elected president and general manager of the Kelly Reamer Co., Cleveland, at the annual meeting of stockholders a few weeks ago. W. A. Calhoun was elected vice president; H. J. Maxwell, secretary, and O. H. P. Davis, treasurer. These officers, together with E. B. Jessup, George Bauer, and Thomas E. Torrance, make up the directorate.

William C. Mather, president of the Cleveland-Cliffs Iron Co., Cleveland, has gone to Ishpeming, Mich., to meet employes who are preparing to take special courses in mining, at schools to be opened by the company. James

MEN OF THE IRON TRADE

W. Swent, a graduate of the Michigan College of Mines, will direct the educational work, assisted by mining superintendents, captains and mining engineers. Men interested in the movement attended a meeting in the main office at Ishpeming last week, when general plans were outlined by M. M. Duncan and William P. Belden.

W. G. Rose, master mechanic of the Cincinnati, Hamilton & Dayton railroad, at Cincinnati, O., has been appointed master mechanic of the shops at Moorefield, near Indianapolis, succeeding W. C. Steers, resigned. Mr. Rose is succeeded by Charles A. Gill, master mechanic of the Baltimore & Ohio Southwestern, at Washington, Ind. J. J. Carey succeeds Mr. Gill.

Ambrose Monell, president of the International Nickel Co., New York, is president of a recently organized Ontario company, known as the Canadian Mining & Exploration Co., Ltd., in which American and Canadian capital is invested for the exploration of the Canadian mineral resources. W. E. Corey and E. C. Converse are among those elected to the directorate.

Otto Rudd has been elected general superintendent of the Simmons Mfg. Co., Kenosha, Wis., to succeeed W. W. Vincent, who, with V. L. Alward, former manager of the company's Chicago branch, is establishlishing a new company of the same kind in Kenosha. Mr. Rudd has been assistant general superintendent for several years and has been with the company for about 15 years. He came to America from Sweden 16 years ago and started work as a section laborer on the Northern Pacific. About a year later he joined the Allis-Chalmers Co., leaving to become superintendent of the Davy Clay Ballast Co. Later he went to the Simmons company and worked in every department. H. C. Wagner, in charge of the St. Louis branch of the Simmons company, will undoubtedly be appointed to succeed Mr. Alward as manager at Chicago.

OBITUARIES

Rollin H. Jenney, extensive lumber and charcoal operator in Michigan, died at Marquette, Mich., recently one of the first victims of a typhoid epidemic in that city. Funeral services were held from the first Congregational church, Pontiac, Mich.

Mr. Jenney was born at Warren, Mich., in 1857, and, after receiving a common school education, engaged in charcoal operations, becoming identified with the Union Iron Co., Detroit, Mich., first. His activities covered a period of 35 years, during all of which he was associated with the charcoal iron industry in Michigan. He is credited by some authorities with having done more than any other man in clearing up the hard wood lands of Michigan, converting the product into lumber, cordwood, charcoal and its by-products. After serving several years with the Union Iron Co., he became superintendent of the company's wood and charcoal department. Severing his connection with the concern in 1897, he embarked in timber operations on his own account. Later he became superintendent of the wood and lumber departments of the Antrim Iron Co., Mancelona, Mich. He resigned this position, turning it over to his brother, William Jenney, and became general superintendent of the wood, lumber and charcoal operations of the Lake Superior Iron & Coal Co., with headquarters at Marquette, Mich. In July, 1910, he severed his connection with this company and once more engaged in lumber operations for himself, working on an extensive plan.

George H. Smith, president and general manager of the George H. Smith Steel Casting Co., Milwaukee, died recently at his home, 855 Richards street, Milwaukee, aged 49. He had been ill but a short time. For the last 13 years he had been at the head of the G. H. Smith Steel Casting Co., succeeding his father, C. J. Smith, who founded the C. J. Smith & Son bicycle works. Shortly after the death of the father, the George H. Smith company was formed. Branching out from the manufacture of bicycle parts, the company worked up a large steel casting business. Beside his widow, the deceased is survived by three brothers, C. S. Smith, A. S. and A. O., president of the A. O. Smith Co.

Eugene Thomas Pearce, for many years an officer of the Link Belt Machinery Co., Chicago, and a resident of that city for 30 years, died recently at Attleboro, Mass.

Edmund Thompson Allen, 76 years old, a director of the South St. Louis Iron Co., died recently at his home in St. Louis.

Joseph F. Wagner, aged 67, former president and member of the firm of J. F. Wagner Sons Sheet Metal Works, Louisville, Ky., died recently as a result of an accident, when he was thrown from a wagon in a runaway.

Isaac D. Thomas, a retired manufacturer of steel shutters and formerly manager of Clark, Burnett & Co., which concern he bought out 20 years ago, died recently at his home, No. 48 Downing street, Brooklyn, N. Y., from ptomaine poisoning. Mr. Thomas was 65 years old. He is survived by his widow.

William H. McCord, president of Post & McCord, New York City, prominent steel erectors and contractors, died June 4, at his home in Greenwich, Conn., from a stroke of paralysis. Mr. McCord was born 60 years ago in Newburgh, N. Y. He was president and director of the Iravona Coal & Coke Co., and a director and officer in other corporations.

LOW PRICES

In This Country Affected Dominion Steel Corporation.

The report of the Dominion Steel Corporation for the 21 months from July 1, 1910, to March 31, 1912, has been issued. The affairs of the corporation and the subsidiary companies have been consolidated in a combined balance sheet, on the principle adopted by the United States Steel Corporation. The aggregate assets are given as $76,566,341, the combined liabilities $30,124,595, and the stock issues $45,656,800, leaving a surplus of $784,945. The consolidated profit and loss account shows earnings after deducting expenses amounting to $7,388,260. The net earnings, after deductions for sinking fund depreciation, interest etc., were $3,690,149, of which $2,205,203 was paid in dividends and $700,000 set aside as a special appropriation for depreciation and renewals, leaving a surplus of $784,945. The total surplus earnings of the corporation in its 21 months of existence are therefore $1,484,945.

The Dominion Iron & Steel Co.,'s profit and loss account for the year ending March 31, 1912, shows earnings and income $1,895,074, net earnings, $651,298; dividends $1,150,000; surplus, $1,870,674. The earnings of this branch reflect the unsatisfactory conditions of the trade in the matter of prices, which as a consequence of the depression of prices in the United States have marked the past year. The conditions as to bounties and duties have also affected the steel company, as a considerable portion of its product had to be sold in a depressed market in competition with duty free imports from the United States. The increase in output had come up to expectations, the figures for last year as compared with the year preceding being as follows:

	Year ending March 31, 1912.	1911.
Wabana ore	602,168	544,792
Pig iron	290,588	248,715
Steel ingots	335,553	301,940
Rails	153,498	133,896
Wire rods	70,633	78,600
Blooms and billets	42,950	34,110

The expenditures on capital account for the Steel Co. amounted to $2,714,539 in addition to which $1,400,000 was paid on account of the purchase money for Dominion Coal Co. stock.

The Dominion Coal Co.'s profit and loss account for the year ending March 31 showed operation earnings, $2,274,110; net earnings, $1,480,416; dividends, $810,000; surplus, $1,338,947. The output in tons for the year as compared with the preceding twelve months was as follows, but it is to be noted that the figures for the earlier period are not normal, as regards the Cumberland collieries, owing to the strike:

	Year ending March 31. 1912.	1911.
Cape Breton collieries	4,063,395	3,752,298
Cumberland collieries	342,868	109,863

During the year the amount expended on new collieries and other property of the Coal company in Cape Breton, amounted to $1,576,931 and on the Cumberland property to $23,353. Operations at all the collieries have been carried on steadily. The new mines in the Lingan district are making an excellent showing in tonnage and quality, the coal from No. 6 having greatly improved since the deeper parts of the seam were reached.

PITTSBURGH STEEL CO.

Submits Balance Sheet for Year Ended April 30, Last.

The general balance sheet of the Pittsburgh Steel Co., as of April 30, last, as submitted to the New York stock exchange, compares with that of June 30, 1911, as follows:

Assets.	Apr. 30, '12.	June 30, '11.
*Real estate	$13,674,534	$13,336,519
Subsid. cos.	330,900	330,000
Cash	429,458	905,938
Notes receivable	35,788	79,759
Accts. receivable	2,022,485	1,458,509
Loans and advances	1,134,625	864,168
Materials and supplies.	2,352,084	2,123,579
Prepaid charges	.....	6,913
Total	$19,978,974	$19,105,386

*Patent rights are not valued.

Liabilities.		
Preferred stock	*$7,000,000	$7,300,000
Common stock	7,000,000	6,000,000
Sub. recpts. on common	.....	484,270
Real est. bonds & mtgs.	30,300	30,000
Time and demand loans	1,100,000	950,000
Accts. payable	1,072,375	1,028,866
Div. payable Jan. 1	.....	129,660
Profit and loss	3,776,598	3,482,589
Total	$19,978,974	$19,105,386

*The amount of preferred stock outstanding will be increased by $3,500,000, and the current assets will be increased by the same amount.

Every man who had been employed by the Detroit Emery Wheel Co., Detroit, was remembered in the will of its proprietor, the late Gilbert Hart, in his will. Those in the company's employ 20 years or more were given $100. A considerable portion of the estate went to charity.

WAX FIGURES

Show Ravages of Diseases—Congress to Meet in Dusseldorf.

The first International Congress on Accident Prevention and Industrial Hygiene, organized by the French, Belgian and Italian private associations for the prevention of accidents, was held in Milan, Italy, during the week beginning May 27, representatives of numerous countries being in attendance. The United States was represented by Dr. William H. Tolman, of New York, who went directly as the representative of the navy and state departments of the government, as well as of the American Museum of Safety, of which he is a director. Mr. Tolman was elected as honorary vice-president of the congress and presided at one of the sessions. Luigi Pontiggio, director of the Italian Industrial Association for the Prevention of Accidents, acted as president. The congress was held under the patronage of the king of Italy.

Mr. Tolman is now preparing to attend the Congress of Industrial Diseases at Dusseldorf. At this congress, an interesting collection of wax figures portraying the ravages of the various diseases will be exhibited. Dr. Tolman plans to bring this collection back with him and exhibit it in this country after his return in September. The American honorary committee to the international congress was composed of the following: E. A. S. Clarke, president, Lackawanna Steel Co; Geo. B. Cortelyou, president, Consolidated Gas Co., New York; Philip T. Dodge, president, American Museum of Safety; S. C. Dunham, president, Travelers' Insurance Co.; Elbert H. Gary, chairman, United States Steel Corporation; John Hays Hammond, mining engineer; A. Barton Hepburn, president, New York Chamber of Commerce; Seth Low, president, National Civic Federation; Hon. Chas. Nagel, secretary commerce and labor, Washington; James McCrea, president, Pennsylvania Railroad Co.; James Speyer, Speyer & Co. None of these men were able to attend, however.

The Bessemer & Lake Erie railroad for the month of May broke all records in the transportation of iron ore from the docks on Lake Erie to the Pittsburgh district, the total for the month being 1,115,000 tons, carried in 23,584 cars. The highest former record made by this road some years ago was 1,053,000 tons.

REORGANIZE COMPANY

Chattanooga Iron & Coal Co. Will be Operated Independently.

Birmingham, Ala., June 10.—Steps leading to the reorganization of the Chattanooga Iron & Coal Co., with a blast furnace at Chattanooga, Tenn., are being taken and in all likelihood will result successfully. The properties of this company were formerly owned and operated as the Chattanooga Furnace Co., in which C. E. Buek and associates were interested. With several other similar concerns, this company was merged into the Southern Steel Co., which was reorganized and is now being operated under the name of the Southern Iron & Steel Co., Birmingham.

Recently the Southern Iron & Steel Co. was unable to meet the bond interest of the Chattanooga Furnace Co., the interest being defaulted, and the works of the Chattanooga company reverted to the original bond holders, who are arranging to finance the proposition, reorganize and operate independently under the name of Chattanooga Iron & Coal Co. Pending arrangements for the necessary working capital, improvements are being made under the receivership of C. E. Buek. It is proposed to equip the furnace as well as the ore and coal mining plants with modern machinery and to begin operating about July 1. This blast furnace has not been blowing for something like 18 months. Remodeling of the stack, which has a daily capacity of 225 tons, is already well under way, and considerable new machinery has been purchased and is being installed.

The raw material holdings of the Chattanooga company are considered very valuable and lie in close proximity to the furnace; the timber and coal lands being located at Dunlap, Tenn.; rock and limestone quarries at Ironco, Walker county, Ga., and iron mines at Estelle, Ga. Plans for the construction of by-product coke ovens have not as yet been worked out, but in the meantime arrangements have been made for a supply of coke through the Durham Coal & Iron Co., of Chattanooga, to be furnished from the bee-hive ovens of the Tennessee Coal, Iron & Railroad Co., at Whitwell, Tenn. These ovens have been idle about 18 months.

All the open-hearth capacity of the Pennsylvania Steel Co. at Steelton, Pa., is now in operation. The Bessemer capacity of this plant is not running full. At the Sparrows Point plant of the Maryland Steel Co., the Bessemer plant is operating, but the open-hearth furnaces are idle. No duplexing is now being done at this plant, but if conditions justify, the open-hearth capacity will be put in to work under this system.

ELEVEN MILLS

In New Tin Plate Plant at Morgantown, W. Va.

Pittsburgh, June 11.—Ground is to be broken this week for a plant for the Pittsburgh Sheet & Tin Plate Co., at Morgantown, W. Va. According to officials of this new company, plans have been practically completed, and the initial works will consist of 11 mills, mainly for the production of tin plate to supply kitchen utensil manufacturers. It will also have a sheet and galvanizing department, and will produce roofing and corrugated sheets. George C. Sturgis, an attorney of Morgantown, and formerly identified with the old Morgantown Tin Plate Co., is the active head of the new company. The capital of $1,000,000 is divided into $500,000 6 per cent preferred non-voting shares and $500,000 of common stock. The construction work will require some time. Most of the stock subscriptions of this company have come from the immediate vicinity of Morgantown.

To Build More Furnaces

President Price of the Cambria Steel Co. has issued the following notice:

"Due to increased business conditions we are going to build three new open-hearth furnaces at Franklin, which will make the total number of open-hearth furnaces at Franklin 20. Work will be begun immediately, and it is expected that they will be completed before January 1. All the work on the furnaces will be done in Johnstown, except a few cranes, which will be purchased outside."

Operating Near Capacity

E. H. Gary states that conditions at South Chicago and Gary are very satisfactory. He says: "Mills are operating very near capacity and are booked ahead for fully six months at full capacity. Gary operations are running at a new high record and up to 100 per cent of capacity. There is some shortage of steel which will be relieved about the middle of July by the operation of four additional open hearth furnaces. Chicago is a great center and is growing rapidly."

BRITISH IRON TRADE

Pig Iron Business Limited—Heavy Demand for Finished Material.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., June 1.

Business in pig iron this week has been on quite a limited scale. There are signs that consumers are trying to "bear" the market, but so far they have produced no effect on prices. In the Sheffield district, inquiries have increased this week in a way suggesting that confidence in price reduction is rather slender. In South Staffordshire, mills, forges and foundries find it difficult to continue in full operation, and are dependent upon small and irregular consignments from the blast furnaces. To some extent, business has been impeded by the dock strike, and the labor unrest generally. As a general rule, smelters are sold forward for quite two months, and the market is strengthened by the scarcity of coke. In no part of the country outside Cleveland are there any stocks, and Connall's stores continue to reduce, the total now being 345,000 tons. The early consumption after holidays prevented the blast furnaces getting any accumulation. Makers have this week realized 54s 6d ($13.34) for prompt f. o. b. deliveries of No. 3 Cleveland; for forward delivery 3d more is asked, but makers do not care much for forward business. There are now 83 blast furnaces in operation in the northeast of England, compared with 78 before the strike. Stocks have been reduced this month by 45,000 tons, making 166,000 since the beginning of the strike. For hematite iron, the great briskness in the steel trade insures a heavy demand. Prices have been strengthened so that mixed numbers are now 71s ($17.38) for cash, and 72s 6d ($17.74) for the latter half of the year.

Finished Iron and Steel. — All branches of the finished iron and steel trade are enjoying extraordinary activity. In the northeast district, there has never been such a demand for material. Several of the largest works kept in operation throughout bank holiday. A number of establishments have been obliged to refuse orders. The most pressing demand at present is for billets, which demand amounts to a temporary famine. The Scotch steelmakers have this week increased their prices by 5s for boiler plates, ship plates and angles, which makes a total advance of 20s per ton since the middle of December, and brings quotations to the highest rate existing since December, 1907.

IRON AND STEEL SECURITIES

The movement of prices on the New York stock exchange last week was within a narrow range. The trading, which was light and mostly speculative, was confined largely to a few stocks. Prices for special issues were carried sharply upward. Despite the absence of heavy buying, the market for the most part was firm. Lackawanna Steel advanced 4½, making a net gain in two weeks of 6½.

Monday, stocks dull but fairly steady. Wheat strong and higher on unfavorable crop reports. Tuesday, there was a good rally in stocks, with a few specialties scoring large gains. The volume of business was larger. Foreign markets stronger. Government cotton report placed the condition as of May 25, at 78.9, against a 10-year average of 81.5. Wednesday, market active and prices advanced sharply. Steel was one of the leaders of the upward movement. Thursday, stocks buoyant under the lead of the coppers. Copper metal advanced to 17⅜ cents, the highest price of the year. Friday, market inactive and heavy in tone. Foreign markets weak and rumors of financial trouble impending in Berlin caused uneasiness. Saturday, a few specialties advanced sharply but the regular list was sluggish.

Money on call ranged between 3 and 2¼ per cent. Time money was decidedly more active. The supply was good with the demand heavy. The actual condition of clearing house institutions showed loans increased $26,345,000; net deposits increased $22,414,000; total reserve $461,940,000, and the excess of reserve $30,553,900, an increase of $5,047,800. Non-member banks and trust companies showed loans decreased $32,101,300; net deposits decreased $21,029,400; reserve on deposits decreased $3,934,100, and the percentage of reserve 19.3 against 19 the week previous. Bank clearings showed an increase of 28.1 per cent over the preceding week and an increase of 8.1 per cent over the corresponding week last year. Commercial failures numbered 257, compared with 205 the preceding week and 243 the corresponding week last year. Shares were sold to the number of 2,287,800, compared with 1,840,700 the preceding week and 2,496,000 the corresponding week a year ago. Bonds, exclusive of government bonds, were sold to the amount of $11,465,000, compared with $8,654,000 the preceding week and $22,037,000 the corresponding week a year ago.

	Clos'g Quo. June 8	Changes in week.	Annual Meeting date 1912	Stock Outstanding	Basis.	Dividend Last Dividend	Dividend Date Last Div. Pay
Allis-Chalmers	¾	— ⅛		$19,820,000		.....	
Allis-Chalmers, pr	2½	— ¼		16,050,000	7 cum.	1¾ Q.	Feb., 1904
American Can	36¾	+1½	Feb. 6	41,233,300		.....	
American Can, pr	118¾	+2⅜		41,233,300	7 cum.	1¾ Q.	Juiy, 1912
Am. Car & Fdy	59¾	+1⅞	June 27	30,000,000	2	½ Q.	July, 1912
Am. Car & Fdy., pr	119	—1		30,000,000	7 n. c.	1¾ Q.	July, 1912
American Loc	42¼	+1¼	Oct. 15	25,000,000	5	1¼ Q.	Aug., 1908
American Loc., pr	107	—1¼		25,000,000	7 cum.	1¾ Q.	Apr., 1912
American Ship	50⅞	.....	Oct. 9	7,600,000	4	2 Q.**	June, 1911
American Ship, pr	101	.....		7,900,000	7 n. c.	1¾ Q.	Apr., 1912
Am. Steel Foundries	36½	+ ½	Mar. 21	17,184,000	5	1¼ Q.	May, 1911
Barney & Smith	10	.....	June 4	2,000,000	4	1 Q.	Dec., 1907
Barney & Smith, pr	75	.....		2,500,000	8 cum.	2 Q.	Dec., 1911
Bethlehem Steel	37⅝	+1⅝	April 2	14,862,000		.....	
Bethlehem Steel, pr	72	+2		14,908,000	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	43⅜	+ ⅝	Mar. 19	45,000,000*	5	1¼ Q.	May, 1912
Cambria Iron	44	+ ½		8,468,000*	4	2 S. A.	Apr., 1912
Chicago Pneumatic Tool	..	...	Feb. 19	6,448,800	4	1 Q.	Apr., 1912
Colorado Fuel	28⅝	+1⅝	Oct. 21	34,235,500		1¼ Q.	Apr., 1902
Crucible Steel	12¾	+ ¾	Nov. 15	24,578,400		.....	
Crucible Steel, pr	86¼	+2¼		25,000,000	7 cum	1¾ Q.	Mar., 1912
Empire Steel	5	.....	Feb. 28	1,254,770		.....	
Empire Steel, pr	45	.....		2,500,000	6 cum.	2 S. A.	July, 1911
Fay & Egan	75	.....	Feb. 20	1,000,000	7	1¾ Q.	Nov., 1908
Fay & Egan. pr	115	.....		1,000,000	7 cum.	1¾ Q.	May, 1912
General Electric	169	+2	May 14	77,281,200	8	2 Q.	July, 1912
Harbison-Walker	39	.....	Jan. 15	18,000,000	2	½ Q.	Mar., 1912
Harbison-Walker, pr	100	.....		9,600,000	6 cum.	1½ Q.	Apr., 1912
International Pump	26	— ⅛	Dec. 10	17,762,500		½ Q.	Apr., 1905
International Pump, pr	80	.....		11,350,000	6 cum.	1½ Q.	May, 1912
Lackawanna Steel	35½	+4½	Mar. 13	34,978,000		.....	
Lake Sup. Corp	30¾	— ⅝	Oct. 2	40,000,000		.....	
New York Air Brake	74	+12½	Mar. 13	10,000,000	6	1½ Q.	July, 1911
Niles-Bement-Pond	95	.....	Feb. 7	8,500,000	6	1½ Q.	June, 1912
Niles-Bement-Pond, pr	101	.....		2,000,000	6 cum.	1½ Q.	May, 1912
Otis-Elevator Co	76	+1	Mar. 18	6,358,600	4	1 Q.	Apr., 1912
Otis Elevator Co., pr	100	.....		6,375,300	6 n. c.	1½ Q.	Apr., 1912
Pa. Steel	60	.....	May 13	10,750,000		.....	
Pa. Steel, pr	99½	— ½		20,587,500	7 n. c.	3½ S. A.	May, 1912
Pittsburgh Coal	22½	+ ½	Mar. 12	28,104,600		.....	
Pittsburgh Coal, pr	90⅝	+ ⅝		27,071,800	7 cum.	1¾ Q.	Apr., 1912
Pittsburgh Steel Co., pr	103¼	+ ¾	Oct. 7	7,000,000	7 cum.	1¾ Q.	June, 1912
Pressed Steel Car	35½	+2⅜	Feb. 21	12,500,000		1 Q.	Aug., 1904
Pressed Steel Car, pr	101	—1		12,500,000	7 n. c.	1¾ Q.	May, 1912
Pullman	159½	.....	Nov. 13	120,000,000	8	2 Q.	May, 1912
Railway Stl. Spring	35	+1	Mar. 7	13,500,000	2	1 S. A.	Oct., 1908
Railway Stl. Spring, pr	102	+1⅜		13,500,000	7 cum.	1¾ Q.	June, 1912
Rep. Iron & Steel	25	+3⅛	Oct. 16	27,191,000		.....	
Rep. Iron & Steel, pr	80	+4		25,000,000	7 cum.	1¾ Q.	Jan., 1912
Sloss-Sheffield	52¼	+3¼	Mar. 13	10,000,000	5	1¾ Q.	Sept., 1910
Sloss-Sheffield, pr	100	.....		6,700,000	7 n. c.	1¾ Q.	Apr., 1912
U. S. Pipe & Fdy. Co	20⅝	+ ⅜	June 26	12,500,000		1 Q.	Dec., 1907
U. S. Pipe & Fdy. Co., pr	58	+2		12,500,000		1¼ Q.	June, 1911
U. S. Steel	69⅞	+2½	April 15	508,302,500	5	1¼ Q.	June, 1912
U. S. Steel, pr	111⅛	+ ⅝		360,281,100	7 cum.	1¾ Q.	May, 1912
U. S. Steel 5s	102½	+ ⅜		465,189,500	5	5 Q.‡	
Va. Iron. Coal & Coke	58	— ¼	Sept. 17	9,073,680		.....	Oct., 1907
Westinghouse Air Brake	175	+4½	Oct. 1	20,000,000*		5. †	July, 1912
Westinghouse Electric	73¾	+2¼	June 12	3,998,700*	7 cum.	1¾ Q.	Apr., 1912

Par value of shares, $100, except those starred (*), $50.
**Includes last 1 per cent payment of 4 per cent extra.
†Stock.
‡Include 2½ regular, 1½ extra and 1 special.

Copper Stocks

New York.—Amalgamated Copper closed 86⅜, a net gain of 4.

Boston.—Anaconda closed 42½, a net loss of ¼; Calumet & Arizona closed 77½, a net gain of 3; Calumet & Hecla closed 524, a net gain of 34; North Butte Mining closed 31½, a net gain of 3½; Quincy Mining closed 92, a net gain of 4½.

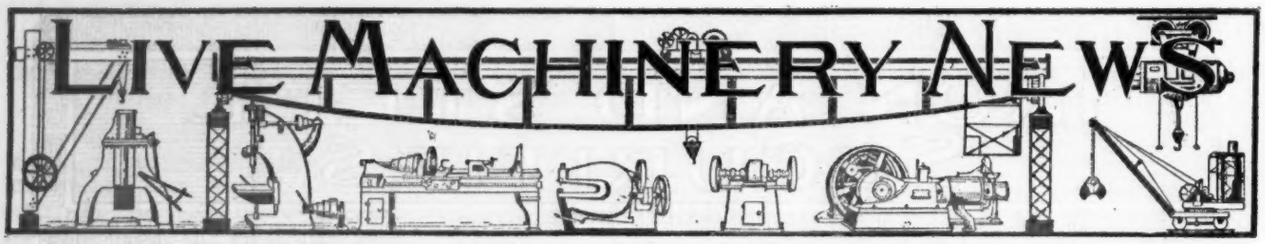
Financial Notes

The Westinghouse Air Brake Co., Wilmerding, Pa., has increased its capital stock from $14,000,000 to $20,000,000.

The American Can Co. has declared its regular quarterly dividend of 1¾ per cent on preferred stock payable July 1.

The Railway Steel Spring Co. has declared the regular quarterly dividend of 1¾ per cent on its preferred stock, payable June 20.

At the regular monthly meeting of the directors of La Belle Iron Works, held in Wheeling, W. Va., May 27, the usual quarterly dividend of 2½ per cent was declared.



In New York, dealers report a satisfactory aggregate of business last week. although no single interest placed machinery orders amounting to a conspicuous total. Scattered buying has sustained trade actively at above the volume of business done the corresponding week in 1911. A recent buyer of machine shop equipment, including several electric cranes, is said to have secured its requirement at close to the cost to manufacture. That feature of business, however, is less prominent than it was a year ago. Sellers of power machinery have done a good volume of trade and the outlook for future orders is considered favorable.

In Pittsburgh the demand for machinery has shown a marked improvement, and prices are now showing the effect of increased buying and average somewhat above those of a week ago. Inquiries are more numerous, machinery builders are generally more active, and plants are running more nearly to capacity than for some months.

In Cleveland, the machinery tool business picked up a trifle last week, although business isn't as brisk as dealers would like to see it. Several small inquiries were out and small orders made a fairly good aggregate. Conditions are not expected to be entirely satisfactory until fall. Second hand machinery and power plant equipment moved somewhat more rapidly than a week or two ago.

Power Plant Equipment

It is reported that the Lauer Motor Co. is considering plans for an extensive addition to its plant at Plainfield, N. J.

An electric light plant will be installed by the Decherd Mill Co., of Decherd, Tenn. The engine to be used will be operated by natural gas.

The Henry Vogt Machine Co., Louisville, Ky., will install an addition to its power plant, putting in equipment capable of generating 300 kilowatts. A generator, direct connected to a Corliss engine, will be purchased.

New Construction

The Breslin Boiler Works will erect a foundry at Ft. Smith, Ark., to cost $65,000.

The Canada Foundry Co., Toronto, Can., is erecting a foundry for the manufacture of ornamental iron at a cost of $110,000.

The Union Iron Works, Los Angeles, Cal., has purchased about 15 acres, facing 250 feet on Santa Fe avenue, and runnning through to Alameda street, where the company will move its plant. The new location is in the city of Vernon.

The Automatic Register Co., Pierce building, St. Louis, is contemplating the erection of a new plant in or near St. Louis.

The Topton Foundry near Allentown, Pa., is to be enlarged to increase its capacity. The work will begin immediately.

The A. & F. Brown Co., manufacturer of shafting pulleys, 172 Fulton street, New York, has begun work on an extension to its plant at Elizabeth, N. J. The addition will be 90 x 160 feet, and will be used as a foundry.

The building at the northeast corner of Twenty-first and Lippincott streets, Philadelphia, owned by the Steel Heddle Mfg. Co., is to be torn down to make way for a new structure.

Additional contracts for the Murphy Iron Works factory, at Detroit, have been let as follows: roofing and sheet metal, American Roofing Co.; plumbing, A. W. Schultz Co.

The Ajax Metal Co., Philadelphia, has been granted a permit to begin alterations at the plant at Delaware avenue, south of Orthodox street. The estimated cost of this work will be $3,200.

The Mason Engineering & Mfg. Co., New Wilmington, Pa., has completed its new machine shop and is installing machinery. Work is shortly to commence on a foundry, which is to be located adjacent to the machine shop.

The Cottage Planing Mill Co., Everett, Pa., has adopted plans for a complete reconstruction of its plant, which was destroyed by fire, and will use reinforced concrete and brick for building material. Electric motors will drive all machinery.

The Hamilton Mfg. Co., Two Rivers, Wis., manufacturer of printers' supplies, is building a large addition to its plant, which will be devoted to the manufacture of printers' goods in steel. The new building will add 65,000 feet of floor space to the present plant.

The Oakley Park Co., of Cincinnati, has secured the contract for building the new plant of the Nimmo Fence & Wire Goods Co., which will be located at Russell avenue and the B. & O. S. W. railroad, Oakley. Work will be begun as soon as possible.

The Globe Automatic Sprinkler Co. has been incorporated with a capital stock of $1,000,000, and is at present seeking a location in Cincinnati upon which to build its plant. The company will manufacture automatic sprinklers, and will employ about 500 men. A B. Gould is president of the concern.

The Worcester Machine Screw Co., Worcester, Mass., has awarded E. D. Ward the contract for an addition to its plant on Beacon street. The new structure will be of brick, mill construction, 150 by 62 feet and three stories. It is expected to be completed Sept. 1 and will double the size of the company's plant.

The Columbia Steel Shafting Co., Pittsburgh, has begun construction work on its additions to the plant at East Carnegie, Pa. The plans call for a new shipping and stock room, and the erection of a new rolling mill, which will roll from ¼-inch to 2½-inch bars, and a number of other improvements.

The reorganized I. B. Rowell Co., a Menominee Falls, Wis. firm, has purchased ten acres in Milwaukee, and will move to the latter city. The erection of a large factory will begin at once and it is expected to occupy it in September. The company manufactures agricultural implements and recently increased its capital to $100,000.

Expenditures involving $7,000 are being made in several building improvements at the plant of the Crucible Steel Co. of America, at Syracuse, N. Y. Ground has been broken for a new mixing room to take the place of the

one destroyed by fire in December. A new laboratory, to cost $4,000, is to be erected in the near future to relieve congested conditions in the present quarters.

The Sterling-Steel Foundry Co., Braddock, Pa., has begun an addition to its plant. It will be 100 x 200 feet and will serve as a foundry and machine shop. About $125,000 will be expended in the new work.

The Petroleum Iron Co., Sharon, Pa, has awarded contracts for a new crane run-way at its plant, and a contract with the Massillon Bridge Co., Massillon, O., for a large amount of steel work which will give additional facilities for the production of its principal products. About $25,000 is to be expended in the improvements.

J. M. Wilson, formerly of Denver, Colo., and H. C. Ruth, San Antonio, Tex., have purchased property at the corner of the International & Great Northern railroad and Castro street, San Antonio, on which they will erect a shop building at once. The shop will be equipped with tools for the construction of boilers, steel tanks, smokestacks and plate steel work of all kinds. The new building will be 60 x 100 feet and will be constructed to carry a five-ton traveling crane. It will be built in such a manner that additions may be made at any time.

The Hartford Tubing Co., Hartford, Conn., it is said, is considering a location in Springfield, Mass., to establish a plant that will employ something like 500 skilled mechanics. If it is decided to build the plant, work will probably be started shortly. It has been given out that the company proposes to erect a factory of cement construction, 100 x 300 feet. The proposed plans call for a four-story building with a basement beneath. The company is capitalized at $250,000.

The Buffalo Bridge Co., Buffalo, incorporated for $50,000, advises that it proposes to build several additions to its present plant, which is equipped with modern machinery. As to the new equipment which the company will place in its new additions, it is not at present able to say definitely. The company's present capacity is about 10,000 tons a year, which it is proposed to triple when the new plant is started up. Directors of the company are: H. A. Feindt, M. L. Skelly, John F. Miller, George L. Ballou and Louis Fetcher. The officers are: President, H. A. Feindt; secretary and treasurer, John F. Miller; first vice president, M. L. Skelly.

R. C. Stewart, president of the Stewart Iron Works Co., Cincinnati, whose plant was badly damaged by fire on June 1, stated that the work of clearing up the ruins preparatory to rebuilding would begin as soon as the insurance could be adjusted, which he thought would take about two weeks. The new building will double the size of the old one, according to plans. All available space in the Madison avenue building,which was saved, will be utilized in filling about 500 new orders in the fence department, which was destroyed. The jail department sustained slight damage, and work there can be resumed at once. It is said that the damage to the burned building and stock will amount to $75,000 and that of the pattern department and machinery will reach $20,000.

The Detroit United Railways, Detroit, is planning to move its industrial plants to its property in Highland Park, and will put up, it is said, factories for the building of most of the cars to be added to the equipment. The machine and repair shops at Monroe avenue and Dequindre street will be rebuilt in the rear of the present power plant in Highland Park. Four buildings are to be erected. The structure will have a frontage of 289 feet on Third avenue and a depth of 208 feet. North of it will be the foundry building; opposite it on the west side of Third avenue will be the truck shop. A power plant for operating these buildings also will be built.

Water Works

A waterworks plant is to be built at Coal Creek, Tenn., according to plans which have been announced. G. W. Wendling is chairman of a committee of the city council, which is investigating the project.

Machine Tools

Quotations on a second hand air compressor with a capacity of 50 cubic feet a minute are wanted by the Evans Chemical Works, Nicholasville, Ky.

The Safety Car Heating Co. has placed a part of its list of machine tool requirements for the Jersy City plant. The entire list, amounting to about $60,000, will probably be closed within the next two weeks.

Miscellaneous

The Clyde Iron Works, Duluth, Minn., has in its yard a large shipment of its machinery ready to go down to Mexico as soon as the present insurrection there shall have quieted down.

The Youngstown Sheet & Tube Co., Youngstown, O., placed an order with the General Electric Co. for three 500-horsepower turbo-generator sets and switchboard, and with the Crocker-Wheeler Co., for a motor generator set to supply power for the addition being made to its plant at Youngstown.

The board of education of Louisville, Ky., will purchase a considerable amount of heating equipment. Steam plants are to be installed in several schools, boilers and other material being required. Sam D. Jones is business director.

The Bruce-Macbeth Engine Co., Pittsburgh, has been awarded a contract for three 150-horsepower vertical gas engines to provide additional equipment for the Fort Pitt hotel, that city.

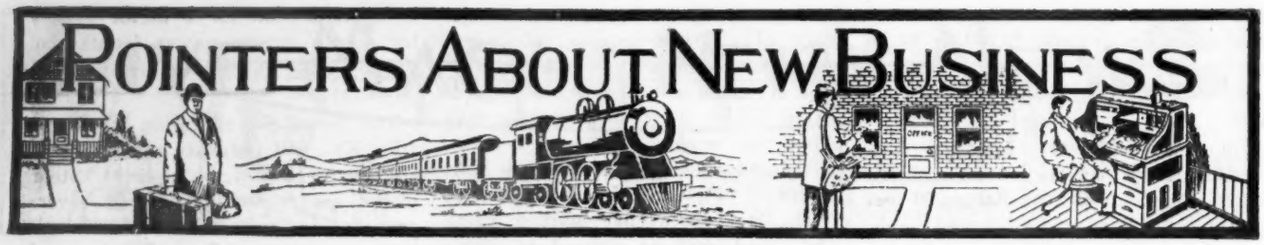
The Pittsburgh Valve Foundry & Construction Co., Pittsburgh, is working on extensive contracts for equipment for the new additions to the Pittsburgh Steel Co.'s plant at Monessen, and reports much new inquiry and better business conditions.

The Apollo Iron & Steel Co., which is building a plant at Apollo, Pa., has awarded a contract for the main buildings to the McClintic-Marshall Construction Co., Pittsburgh, and has also placed orders for motors for motor drive for hot mills with the General Electric Co., and one 30-ton crane and two 10-ton cranes with the Northern Engineering Co.

The Canton Machinery Exchange, Canton, O., reports the recent sales of one Davis-Bournonville Co.'s acetylene welding outfit to the C. R. Wilson Body Co., Detroit; one silver Manufacturing Co.'s medium sized drill press and portable blacksmith forges to the Binns Machine Co., Canton, O., and a number of sales of supplies and smaller machines.

The Westinghouse Electric & Mfg. Co., Pittsburgh, has taken orders as follows: The Havana Electric Railway Co., Havana, Cuba, for 30 double equipments of electric cars; one quadruple equipment for the Montgomery Transit Co., Norristown, Pa.; 18 quadruple equipments for the Susquehanna Railway, Light & Power Co. of Pennsylvania, and two quadruple equipments for the Union Street Railway Co., New Bedford, Mass.

Plans have been announced for the addition to the plant of the United States Light & Heating Co., Niagara, N. Y. Seven buildings will be erected and two of the present buildings are to be increased in size by additional stories. The company contemplates spending about $200,000 on the improvements, including machinery requirements. Specifications on the latter are not before the trade, but it is estimated that the equipment will involve an expenditure of approximately $100,000.



New Buyers

(In order to assist the post office in delivering letters to new concerns, it is suggested that the names of incorporators be written in the lower left hand part of every envelope addressed to such new companies.)

The following manufacturing companies have filed articles of incorporation:

Commercial Motors Co., Louisville, Ky.; $10,000; by Henry B. Fitch, R. J. Hurt and R. E. Scharf.

New Standard Adding Machine Co., St. Louis; $300,000; by F. R. Rice, F. Raymond Jr., H. L. Cornet, F. B. Call.

Cotta Gear Mfg. Co., Rockford, Ill.; $100,000; by P. A. Peterson, Levin Faust, Charles E. Cotta and F. W. Lindgren.

American Delinting Co., McRaven, Miss.; $50,000; to manufacture cottonseed delinting machinery; by Wm. A. Pollock, Pascagoula, Miss.

The National Steam Heating Co., Dayton, O.; $50,000; by James Saders, Karl F. Deal, Joseph Meyer, Edward L. McCleary, Elwood C. Bayer.

The Automatic Starter Co., St. Louis; $50,000; manufacturing automatic starters for gas and gasoline engines; by John J. Cochran, William Ramsay, H. C. Whitehill.

The Globe Automatic Sprinkler Co., Cincinnati; $1,000,000; to manufacture sprinkling devices; by J. G. Schmidlapp, W. R. Koehler, A. B. Gould, B. B. Dale, R. F. Balke and Edw. Senior.

The Cement Products Machinery Co., Columbus; $50,000; cement products; by Walter F. Felton, C. C. Flarida, Wm. H. Sharp, L. M. Ferguson and E. B. Taylor.

The National Engine & Mfg. Co., Youngstown, O.; $25,000; by W. J. Sheldon, C. F. McLaughlin, H. R. Greenlee, C. W. Osborne, J. T. Harrington.

Bruner Mfg. Co., Marion, Ind.; $1,000; to conduct a general machine shop; by S. E. Bruner, William Guthrie and J. P. Myers, all of Marion.

The Standard Automatic Machine Screw Co., Cleveland; $25,000; by J. H. Murphy, Helen Williams, M. J. Gleason, M. M. Gleason, Edward Burke.

The Buckeye Brass & Mfg. Co., Cleveland; $20,000; by David M. Strauss, Harry Selker, George J. Allmendinger, B. J. Sawyer, Albert Stearns.

The Automatic Tile Machine Co., Cincinnati; $10,000; by A. W. Koch, E. Friehmelt, William K. Achert, Katherine F. Achert, Henry J. Overbeck, F. J. Overbeck, G. J. Koch.

The Piano & Heavy Box Truck Mfg. Co., Toledo, O.; $20,000; to manufacture heavy trucks of all kinds; by A. T. Raynor, W. F. Runkle, Henry Hoppenburg and James Long.

Tennessee Implement Mfg. Co., Springfield, Tenn.; $10,000; to manufacture farming implements; by D. F. Williams, H. T. Annis, T. M. Woodard and others.

The Portsmouth Engine Co., Portsmouth, O.; $30,000; machine shop and casting business; by Leslie C. Turley, H. B. Campbell, John Lowry, William D. Puckett and John Rapp.

The Burr Oak Belting Co., Cincinnati; $20,000; belting and mill supplies; by Daniel L. Pierson, William L. Hallpike, Herman A. Bayliss, Charles F. Wellman and Edward D. Rowe.

The Automatic Machinery Co., Indianapolis; $30,000; to manufacture bottling and labeling machinery; by John A. Hook, 1422 East Ohio street; Walter E. Evans and J. D. Lamberson.

Frevert Machinery Co., Port Ewen, Ulster county, N. Y.; $30,000; mechanical and electrical engineers, machinists; by Hubert Dalton, A. N. Emley and Clarence E. Mundy, all of 15 William street, New York City.

Westmoreland-Connellsville Coal & Coke Co., Pittsburgh; $5,000; mining and producing coal and manufacturing the same into coke and the by-products of coal and coke; by Edmund W. Mudge, C. B. Ferree and J. W. Dickson, all of Pittsburgh.

Century Zinc Co., Manhattan, New York City; $20,000; to mine, smelt and deal in metals; Wilbur L. Ball, 614 West 114th street; Herbert L. Coffin, 411 West 114th street; Geo. S. Ludlow, 817 West End avenue, all of New York City.

Pearson Reciprotary Motor Co., Manhattan, New York City; $100,000; to manufacture machinery; by Charles P. Pearson, 320 East Fifth street, Brooklyn; Chas. L. Herrington, 1060 Lincoln place, Brooklyn; James A. McCarren, 648 Eastern Parkway, New York City.

Edwin R. Smith Mfg. Co., Manhattan, New York City; $50,000; to manufacture draughtman's instruments, scientific instruments; by Edwin R. Smith, 65 East Eleventh street, New York City; Morris Lazar, 724 Beck street, Bronx; Arthur Caddell, Paris, Texas.

Estate of J. W. Stirrup, Inc., Manhattan, New York City; $50,000; to manufacture tinware, japanning, etc.; by Chas. H. Stirrup and Frank A. Stirrup, both of 259 Front street, New York City; Mary H. Stirrup, St. George Hotel, Brooklyn, and others.

The Pittsburgh Sheet & Tin Plate Co., Morgantown, W. Va.; $1,000,000; by Harry T. Duke, John H. Salvador and Ernest E. Conrad, of Philadelphia; George C. Sturgiss, Morgantown, W. Va., and Lakin C. Taylor, Cambridge, O.

General Industrial

The Defiance Machine Co., Defiance, O., has awarded contracts for equipment for its new plant now under construction. The buildings are of steel and brick

The time for depositing the securities of the McCrum-Howell Co. has been extended until June 15. It is learned that no plan of reorganization has yet been decided upon.

Additional refrigerating equipment will be required by Armour & Co. for their cold storage plant at Lexington, Ky., the capacity of which is to be considerably enlarged.

Yates, Brown & Yates, Paris, Tenn., will erect a sawmill at Springville, Tenn., and will be in the market for a boiler, an engine and other general equipment.

The Morgan county fiscal court, West Liberty, Ky., has awarded the Empire Bridge Co., Lexington, Ky., a contract for the erection of two bridges.

The Blooming Prairie Iron Works, Alliance, Neb., is making hoops for 16 silos for the Hayes-Lucas-Lambert Co. The rods are 16 feet long and it takes three rods to make one hoop.

The Monroe Steel Castings Co., Monroe, Mich., expects to install a converter in the near future and be in a

position to make both converter and crucible steel castings.

The Starr-Giles Mfg. Co., Elmira Heights, N. Y., recently incorporated, advises it has purchased all the machinery needed at present. Additional machinery, however, will be required in the near future.

The Chicago Pneumatic Tool Co., 50 Church street, New York, reports that the company's business for the first five months of this year is well ahead of the corresponding period of 1911.

The borough of Phoenixville, Pa., has awarded to Chester & Fleming, hydraulic engineers, Pittsburgh, the supervising contract for a 3,000,000-gallon mechanical filter, bids upon which are now being taken.

William Sellers & Co., Incorporated, Philadelphia, have been granted a permit to begin work on the addition to their plant at Seventeenth and Hamilton streets. The cost of this work will exceed $5,000.

The Mahoning Railway & Light Co., Youngstown, O., has begun active building operation on its new $1,500,000 power plant at Lowellville, O. The plant will be one of the largest in that section of Ohio.

McKim, Mead & White, of New York, will draw the plans for the office building to be erected by the Fayette National Bank, of Lexington, Ky. The building will cost $500,000 and will be 15 stories.

The Bessemer Gas Engine Co., Grove City, Pa., has increased its capital stock from $400,000 to $1,000,000, and it is understood will make some expensive improvements, plans for which are now being considered.

An electric traction line is to be built as soon as possible by the Milligan, Elizabethton & Johnson City Electric Railroad Co. It will be ten miles long. J. G. Burchfield, Johnson City, Tenn., is interested.

The Automatic Sprinkler Co., Youngstown, has awarded a contract for a brick and steel factory building at Youngstown, and contractors have commenced work. The equipment order is yet to be placed.

A charter has been applied for by J. A. Larger, J. C. Swearer and R. T. Rossell of Pittsburgh for a company to be known as the Apollo Iron & Steel Co. The plans for the new corporation are not yet announced.

W. L. Rodgers, F. W. Newton and R. F. Ramsey of Pittsburgh have asked for a charter for the Duquesne Motor Car Co. The purpose of the company is to manufacture automobiles and commercial trucks.

At a meeting of holders of the 5 per cent first mortgage bonds of the Central Iron & Steel Co. in Philadelphia, the Girard Trust Co. was formally appointed to succeed the Harrisburg Trust Co., which resigned shortly after the receivership proceedings.

A foundry and machine shop for the manufacture of agricultural implements will be equipped by the Tennessee Implement Co., Springfield, Tenn. The company is capitalized at $10,000 by T. M. Woodard, H. T. Annis and others.

The Goodyear Tire & Rubber Co., 1914 Broadway, New York, has purchased a plot of land on Jackson avenue, Long Island City, and is understood to have in mind the establishment of a factory there in the near future.

The Orrienstein-Arthur Koppel Co., Koppel, Pa., has awarded contracts for a new office structure, which will be of concrete and steel. The plans have been forwarded to the main office at Berlin, Germany, for final approval.

The plant formerly operated by the Crucible Steel Casting Co., Pittsburgh, located in the West End section, is to be offered for sale at auction this week. The property stands on leased ground, and the lease expires in about one year.

Willam Yagle, Oliver Wylie, and Phillip Le Goullon have taken over the old factory building at Thirty-Second street and Railroad street, Pittsburgh, which it is understood, will be operated as the Yagle Foundry.

The S. E. Horton Machine Co., Windsor Locks, Conn., has filed with the secretary of state of Connecticut a certificate of dissolution; and the Iron Co., Hartford, Conn., a certificate of a change of name to the E. Horton & Son Co.

The Sligo Iron & Steel Co.'s mill at Connellsville, Pa., has resumed after an idleness of several months. The company has just been awarded the contract for 600,000 pounds of chain iron from the government for use on battleships.

The Gardner Hardware Co., Gardner, Mass., has been incorporated with a capital of $25,000. Myron B Damon is president; I. Newton Damon is treasurer and Robert D. Gould is clerk. All three officers are from Fitchburg, Mass.

The Wilson-Snyder Centrifugal Pump Co., Pittsburgh, has given notice of increasing its capital stock from $25,000 to $130,000. The new issue will provide for the purchase of the rights and property of H. D. Wilson.

Adolph Dietz & Co. will erect a $25,000 warehouse of the Farmers' Loose Leaf Tobacco Warehouse Co., of Mt. Sterling, Ky. The building will be of reinforced concrete construction and some structural shapes will also be required.

The Falls City Construction Co., Louisville, will build a hotel at Savannah, Ga. The company will design the building as well as erect it. It will probably be of reinforced concrete construction and will cost $500,000.

The Yardley Mfg. Co., Inc., Yardley, Pa., recently incorporated, advises that the feed mixers which it is marketing are now being manufactured at another plant and it is not expected that any buildings will be erected at the present time at Yardley.

Following the selection of an architect, who will be named at a conference, June 15, the Southern National Life Insurance Co., of Louisville, will proceed with plans for the construction of its $500,000 20-story office building. Ed. L. Williams is president of the company.

Boilers, shaker screens, hoisting engine, fan ventilating system, punching machines and an air compressor are included in the list of equipment to be purchased by the Brent, Hart Mining Co., Mannington, Ky., which will increase its production to 500 tons a day.

The Ross Gear & Tool Co., Lafayette, Ind., advises that an authorized issue of $100,000 of preferred stock will be used in the building of the company's factory and equipping it. The factory is now under construction. The equipment is practically bought.

The National Engine & Mfg. Co. has been incorporated under the laws of Ohio at Columbus with a capital of $25,000. W. J. Sheldon, H. R. Greenlee, C. F. Laughlin, C. W. Osborne, and J. T. Harrington, all of Youngstown, are the incorporators. The company will enlarge a business now being carried on at Girard, O.

The Bethlehem Steel Works made its highest record of production during May. The new Saucon plant produced and shipped 40,000 tons of finished steel; the open hearth department turned out 48,000 tons of ingots and there were 10,000 tons of armor plate manufactured and shipped to the Philippines, Argentina and Italy.

The United States Smelting, Refining & Mining Co. has paid $1,200,000 for control of Consolidated Fuel properties, comprising 5,000 acres in Emery county, Utah, together with Hiawatha townsite and half interest in the Southern Utah

railroad, connecting the mine with the Rio Grande at Price, Utah. There were 800,000 of the 1,500,000 shares purchased at $1.50 per share.

A general machine shop will be conducted by the newly organized Bruner Mfg. Co., of Marion, Ind., which has been incorporated and is capitalized at $1,000.

Schedules filed by Emanuel Dreifus & Co., dealers in scrap iron and steel in Philadelphia, show liabilities of $628,598, with assets of $773,747. Among the largest creditors are the First National Bank of Philadelphia, $50,000; Goldschmidt Detinning Co., $83,394; Farmer's Deposit bank, Pittsburgh, $25,000; Lanria Bros. & Co., Reading, Pa., $85,000.

The Merchants & Evans Co., Philadelphia, has secured a site of 50 acres north of Wheeling, W. Va., and will move its Philadelphia plant for the manufacture of tin plate to the new site. The company will utilize the old plant of the West Virginia Bridge Co., and will also erect a number of new buildings and provide new equipment.

The Peninsular Bridge & Iron Co., Port Huron, Mich., advises that it has given a trust mortgage to Attorney J. F. Wilson, of that city, for the benefit of the creditors. In order for them to share in the proceeds it will be necessary for them to file an itemized statement and affidavit with Mr. Wilson within 20 days from June 6.

The Wolverine Brass Works, Grand Rapids, Mich., advising in regard to its new building, says that it will equip it with machinery from time to time as is needed. The power plant and everything it requires have been contracted for. The smaller machines will be added as the necessity arises. The company is not in the market for any at the present time.

The Imperial Steel & Wire Co., of Collingwood, Ont., has converted $300,000 of its unsubscribed capital stock into cumulative preferred stock bearing 7 per cent interest and ranking pari passu with the stock already issued. During the last three years the capacity of the plant has been increased from 15 tons to 40 tons of finished wire product daily.

The National Engine & Mfg. Co., Youngstown, O., has been incorporated by W. J. Sheldon, C. F. Laughlin, H. R. Greenlee, C. W. Osborne and J. T. Harrington. The company has been operating at Gerard, O., and intends to enlarge its plant and engage in the manufacture of engines, motors, etc., on a larger scale. It is expected to increase the capital in the immediate future.

The Pullman Co. reports business moving along about the same rate as in the past six or eight weeks, says a Chicago dispatch. Although the inquiries for specifications are not quite as strong as a couple of weeks ago, yet plants are all busy. Sufficient orders are now waiting to be filled to keep the present force of men occupied well into the crop period.

The International Steel & Iron Co., Evansville, Ind., has been awarded the contract for the construction of a $50,000 school house in Savannah, Ga. The company has also obtained contracts for the iron and steel work on the Grayville, Ill., M. E. church and the Stratford apartments. The International Co. will also furnish the steel work for the addition to the Ballard hotel at West Baden, Ind.

The partnership heretofore existing between M. C. Talmage and John Weidley under the firm name of Talmage & Weidley, 228 North Fifteenth street, Philadelphia, has been dissolved by mutual consent. All payments are to be made at 1123 Appletree to Mr. Weidley, who is authorized to sign in liquidation. The brass foundry business will be continued at the latter address by Mr. Talmage.

The Van Norman Machine Tool Co., Springfield, Mass., has been organized and will assume all the liabilities and carry on the business of the Waltham Watch Tool Co. The management of the Van Norman Machine Tool Co. will be identical with that of the Waltham Watch Tool Co. The newly organized concern asks that those having accounts against the Watch Tool Co. send them in.

The Ohio Timeclock Co., Cincinnati, has been incorporated with a capital of $50,000, and will take over the entire business of the present partnership known as the Ohio Timeclock Co., composed of Otto Mieth, Joseph E. Hausfield and Victor Tresise. They will be officers and directors of the new company, owning and controlling all of the capital stock. The business will be conducted at the same location as under the partnership, 2730-32 Spring Grove avenue.

A plant for the manufacture of steel beds, cots, springs, etc., is to be established at Kenosha Wis., by W. W. Vincent and V. L. Alward, for many years associated with the Simmons Mfg. Co., Kenosha. The new firm contemplates the purchase of the plant of the Windsor Spring Co. Mr. Vincent has been general superintendent of the Simmons company for several years, and Mr. Alward was manager of the company's Chicago branch.

The Kollar Steam Safety Device Co., Lansing, Mich., has been incorporated with a capital of $10,000, and, pending the location of its works in that city, is temporarily making its headquarters in the Oakland building. The invention which the company proposes to manufacture is a safety device for steam engines and was originated by W. B. Kollar. It is claimed that it will prevent the danger of knocking cylinder heads out of any kind of engines, which always causes long delays and much expense, and that it is a simple, economical and effective safety device which is particularly applicable to power mechanisms such as steam hammers, steam feeds for saw carriages and all similar power contrivances.

John Fraser and Thomas Gray have taken over the engineering business conducted by John Fraser at 50 Church St., New York, and have organized a new contracting firm under the name of Fraser & Gray, with offices at 30 Church St. The firm will do a general contracting business in the installation or overhauling of machinery of all kinds, particularly of power and manufacturing plants. Their work will be conducted largely with consulting engineers.

Trade Notes

The Locomotive & Car Co., Cincinnati, which manufactures contractors' equipment and locomotives, will move to Covington, Ky., having acquired a site on Madison avenue in that city. John E. Glenn is president of the company.

Fires

Slight damage was done recently to the Davis Iron Works at Denver, Colo., by fire.

Inconsequential damage was done to the Western Steel & Iron Works at Green Bay, Wis., by fire recently.

The plant of the Stewart Iron Works Co., at Covington, Ky., was badly damaged recently by fire, the loss being estimated at $75,000.

Fire, which originated in the assembly room of the Lyon Motor Co., at Adrian, Mich., recently, damaged the plant to an extent of about $300,000 and damaged a stock of 200 automobiles. One fireman was killed by falling walls.

Three or four buildings of the Didier-March Co.'s plant at Perth Amboy, N. J., were badly damaged by fire recently, causing a heavy loss, which, however, was fully covered by insurance. The company has not yet made any definite plans about rebuilding.